TECHNOLOGY DEPT.

PRODUCTION

FLOW

BASIC MONTHLY

MATERIALS HANDLING AND PACKAGING METHODS

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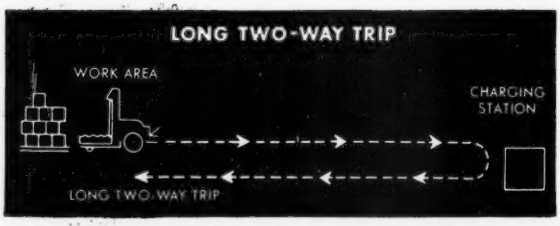

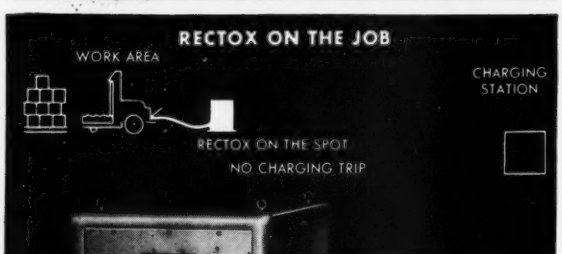

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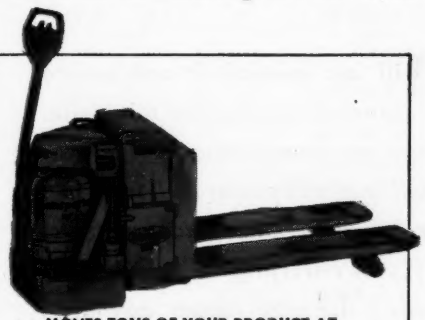

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FLOW BASIC MONTHLY

VOL. 7, NO. 7 APRIL, 1952

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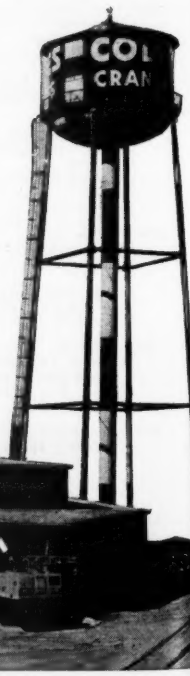

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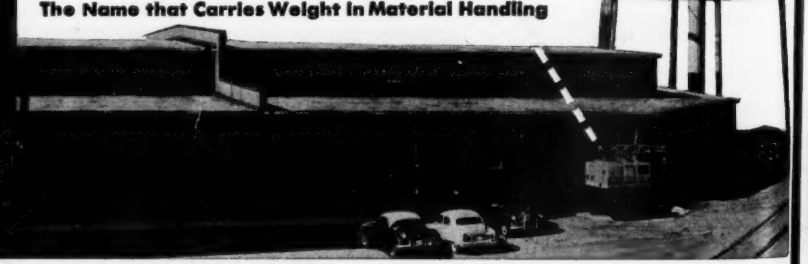

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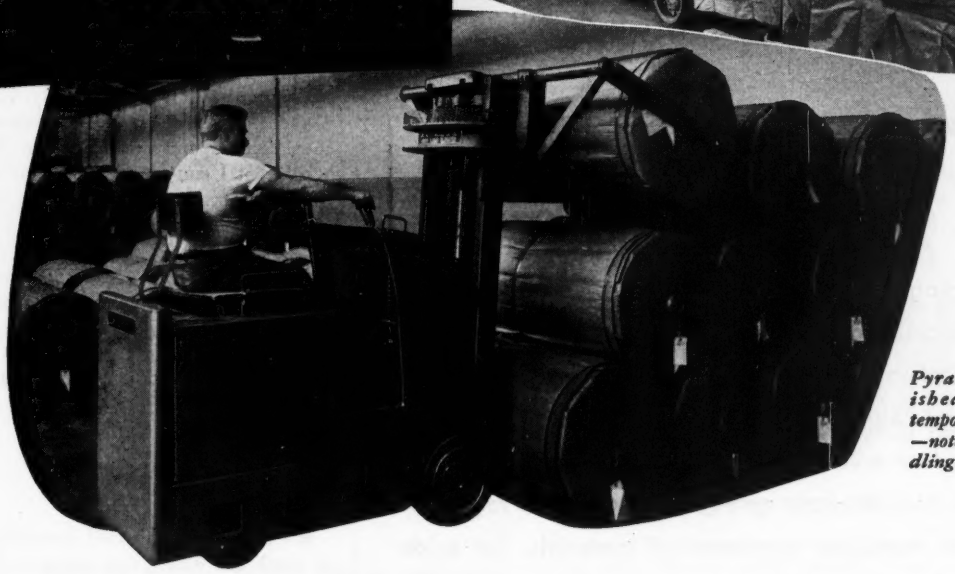
Unit Load Handling of bale pulp saves time, labor and space.



Pyramiding finished fabric in temporary storage —note special cradling attachment.

At a large midwestern rayon plant, *continuous* operation is essential in many processes. Elwell-Parker trucks contribute mightily by steady, reliable service.

From basement storage, an E-P fork truck delivers baled wood pulp to the steeping room via elevator. It loads 3 four-bale tiers on the elevator and, with a fourth tier on its forks, rides to the third floor, where the material is distributed to the steeping presses. In 8 hours, this truck delivers enough material to keep the steeping presses going 24 hours.

In another operation three fume-free electric E-P trucks are used in the aging room, which is windowless and under controlled temperature and humidity. Here, Elwell-Parkers replaced hand trucks. Loads are now 2½ times larger and are handled more safely. Elwell-Parker reliability really pays off in this continuous operation. Special automatic fingertip control for frequent start and stop and low pressure hydraulic system are employed on these trucks.

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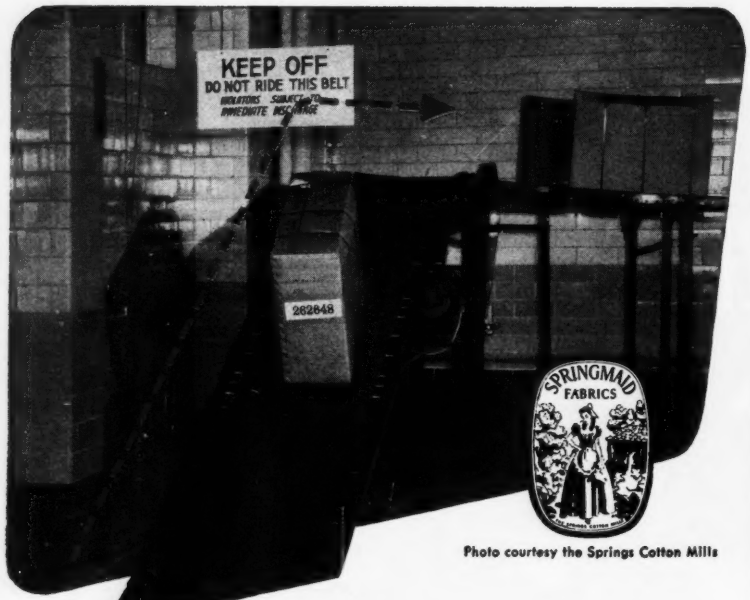

Photo courtesy the Springs Cotton Mills

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Packages of textiles ride the Alvey Conveyors safely and arrive at destination with dispatch. Notable installations in important textile mills reveal how well Alvey Engineers understand the conveyor possibilities that will save time and expense in your mill. You, too, can have conveyors in your plant to accomplish important movement of materials. Set aside those costly manhandling operations. Savings quickly realized will soon pay for the Alvey equipment. Contact nearest branch office or communicate with the main office in St. Louis, Mo., today.

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LETTERS to the editors

To FLOW:

During the last four years I have been working as sales manager for this country's (not the U.S. — Ed.) leading material handling representative . . . . . I want to come and settle down in the United States and offer my services to a company working in this field. I was born in Boston and speak and write English fluently. Can you call my wishes to the attention of your readers and advertisers in the hopes that I can locate a position in your country.
(Name Withheld On Request)

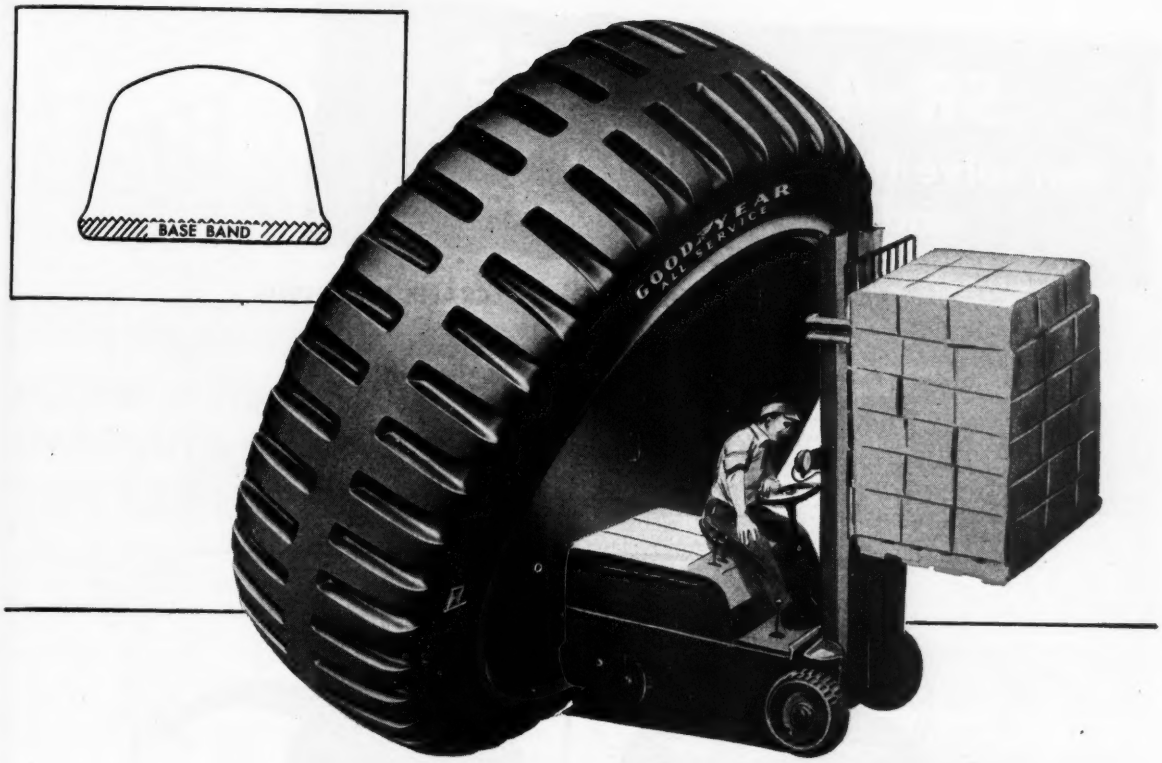
We are publishing excerpts from this gentleman's letter so that interested parties can contact him through us. For those who wish to write to him direct, we'll be glad to send his complete address.

To FLOW:

We are anxious to find a machine or machines which can perform the following operations: (1) take an empty sack from a pile and place it under a weighing scale; (2) clamp and hold the sack in place on the scale while another unit reaches for another sack; (3) release sack, allow it to travel on a special belt conveyor and automatically sew it after vibrating it for best packing; (4) (it would be nice if the sacking hopper of the weighing device was vibrated for better packing while holding the sack suspended from the floor; also, there could be a vibrator on the belt conveyor transporting the bag to the sewing head.) Can you tell me where I can obtain such equipment?
Lawrence Brown
Rice City Rolling Mill

We are throwing out Reader Brown's problem to all our readers. If

(Turn to page 10)



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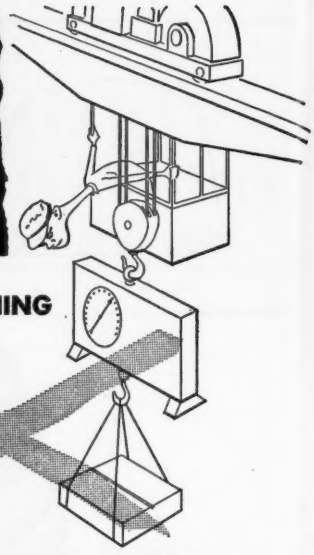
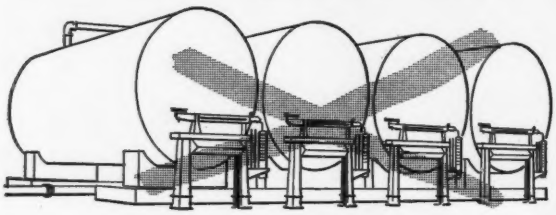
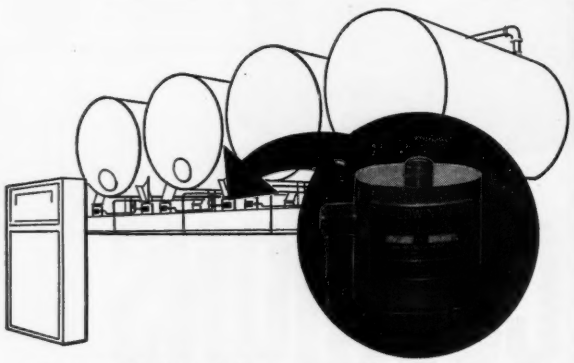
can solve these problems . . . and many others . . . for you!



BATCH WEIGHING



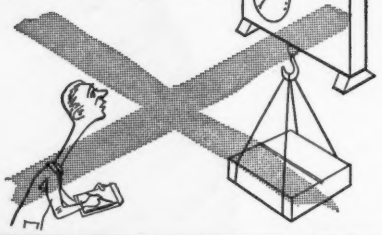


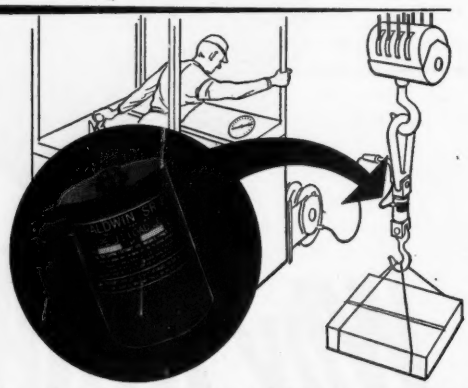
Baldwin SR-4 Load Cells are rapidly replacing conventional lever, poise and knife-edge batch weighing systems because of greater efficiency and lower costs.

Cells may be located under existing supports, require minimum head-room and record without appreciable movement. Because they are completely sealed, cleaning is simplified and corrosion and deposits do not create any problem.

Unlike conventional weighing systems, the indicating, recording or control element may be placed at any desired location near or far. And only *one* indicating unit is required for as many tanks or hoppers as desired.

CRANE WEIGHING





Mounting a Baldwin SR-4 Load Cell in a crane hook is the *new* way to speed weighing of bulk materials . . . speed the checking of platform scales. To make such a check just determine the weight of any bulky cargo on the portable electronic indicator, and compare with platform scale readings.

Use this crane scale, too, for batch weighing . . . for a limit alarm to avoid crane overloading . . . and for weighing truck and rail shipments.

HEART of all SR-4 measuring devices is an SR-4 strain gage which consists of a postage-stamp-sized grid of very fine wire.

This grid is cemented to the inside of the SR-4 device or, in strain analysis work and other types of measuring, directly to the piece under test. Changes in the load applied to the testing device (or test piece) change the electrical resistance of the wires in the grid.

By using a simple potentiometer or a Baldwin SR-4 Wheatstone Bridge Control Box, minute changes in pressure, weight, torque, etc. can be determined easily, inexpensively and with unusual accuracy.

Free from moving parts, simple, rugged, durable, inexpensive, these Baldwin SR-4 Load Cells are ideal for solving many weighing problems.

If you have any measurement problem, it will pay you to investigate the unusual advantages of SR-4 strain gages and measuring devices.

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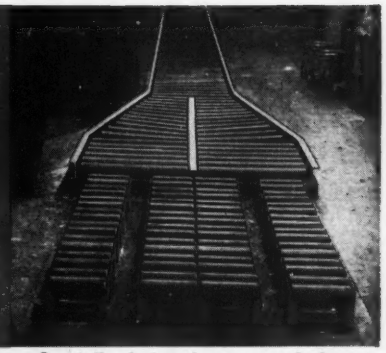


Specially designed conveyer dock . . .

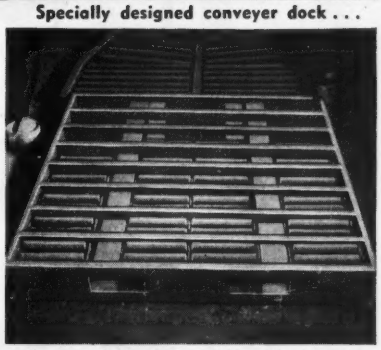
POWELL ENGINEERED PALLET CUTS HANDLING TIME FOR CHEMICAL FIRM

An unusual handling problem was solved at the Pittsburgh Industrial Chemical Co., Clairton, Pa., by a combination special roller conveyer and special pallet.

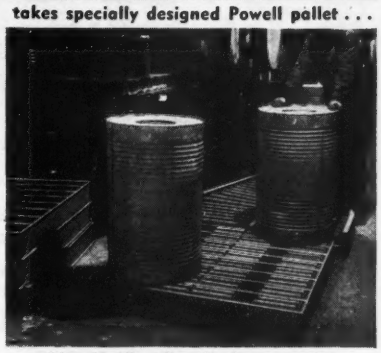
The Pittsburgh Industrial Chemical Co. is a large producer of resinous materials which are poured in hot liquid form into very light gauge, fifty-gallon drums. These drums are then taken to a cooling yard where the resins set and become hard. After hardening handling is a simple matter, but handling the hot liquid resins in the thin containers was the problem that was solved by company engineers working with the Powell Pressed Steel Co., producers of special all-steel handling equipment.

A special design of pallet that would mesh between the rollers of the conveyer was originated by Powell. The pallet is placed into the conveyer in a manner that allows the rollers to extend a fraction of an inch above the pallet. Thus the fragile drums of hot liquid are easily pushed right over the pallet, and a standard fork truck then lifts the pallet away from the conveyer, the load already seated on the pallet with a minimum of handling.

Prior to the pallet method of handling the drums were hand pushed along long sections of conveyer to a cooling room where each drum required individual handling. The pallet system enabled handling of the drums in multiples of four — eliminated the long cooling conveyers, opening up added floor space — and allowed stacking which further conserved valuable floor space. In addition this system has not only greatly reduced handling time, but has enabled faster production with the same handling crew. And, because the product is handled with such ease it eliminates the need for a more substantial and more costly drum.

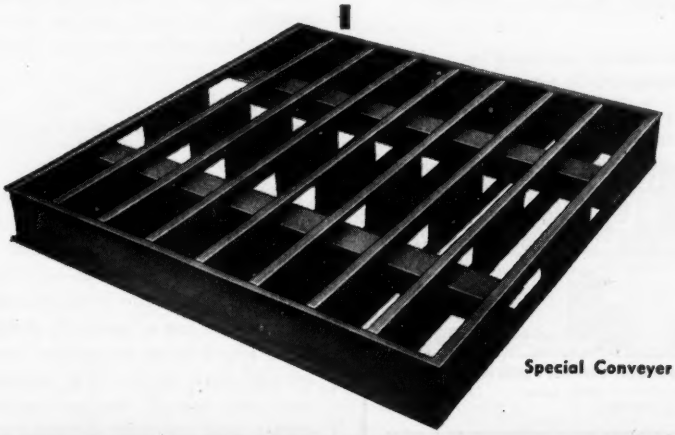


takes specially designed Powell pallet . . .



making loading fragile drums easier . . .

and lift truck handling more efficient.



Special Conveyer Pallet

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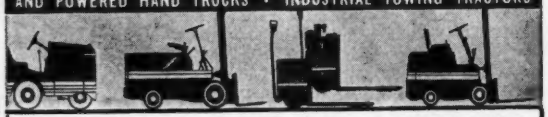

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AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATION IN STRATEGIC LOCATION

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Letters . . . .

(Continued from page 6)

anyone knows of such a machine or combination of machines, we'll pass it on immediately to him. We'd appreciate hearing from you.

To FLOW:

We have the problem of conveying and disposing of tissue paper trim which comes from our slitting operation. We have installed a pneumatic conveyor for this carbon paper trim, and can get it out of the building. However, we are faced then with the problem of disposing of it. It is a most combustible product and could be burned readily if we had some method of conveying it into our boiler and burning it on the spot. Can you tell us who makes this equipment?

C. R. Lindhoff
Frye Mfg. Co.

Here is another problem for which we'd like an answer. Anyone got any ideas?

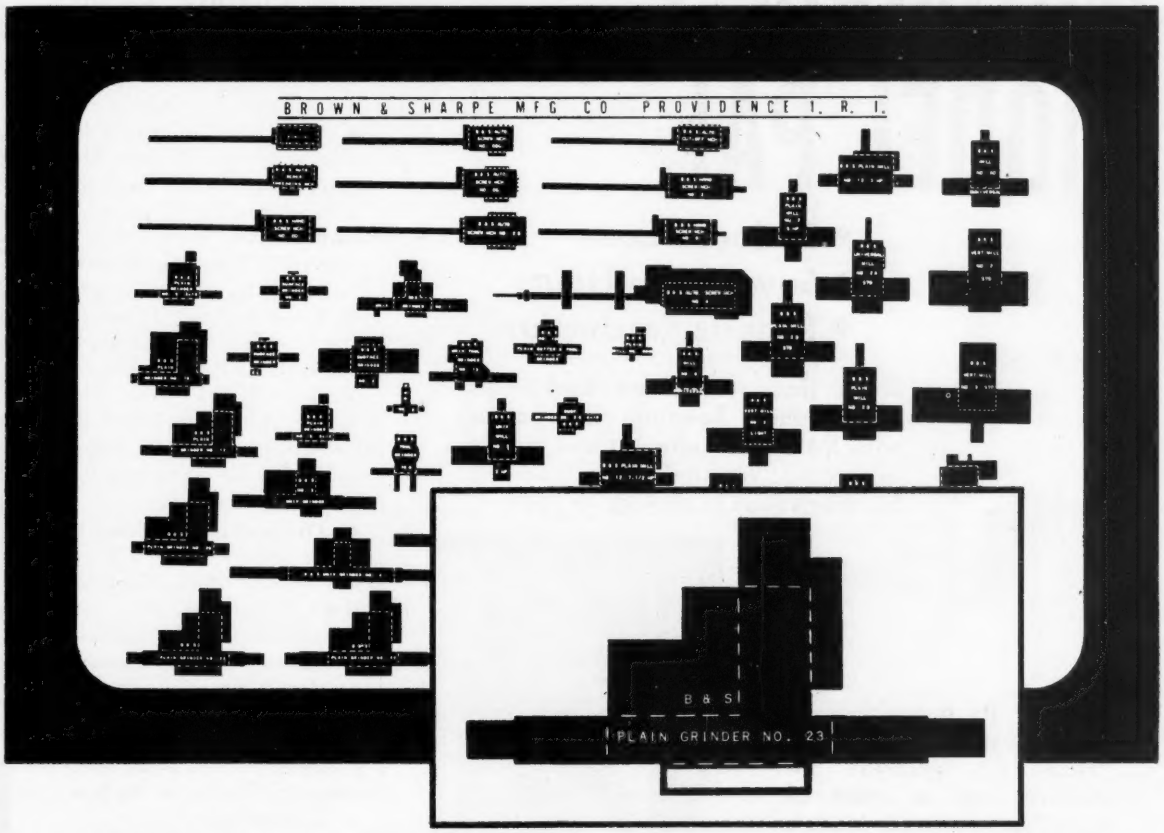
To FLOW:

At the present time we store our bar stock in pigeon hole racks. The openings in these racks are approximately 12 in. square by 10 ft. deep. In order to load these racks we have to handle each bar individually. Have any of your subscribers a device that could be used to load these racks by inserting the whole bundle into the pigeon hole rather than one bar at a time?

A. H. Fowler
Canadian General Electric Co., Ltd.

This problem, one which plagues everyone who must handle and store bar stock, rod, or tubing, was discussed in a recent issue of FLOW. Briefly, the solution presented there, involves the use of specially designed racks which serve as storage containers and work carriers. For movement into and out of storage, monorail cranes with specially designed grabs are used. If you want details, reprints are still available. Or, if you have a system which you consider better, let us hear about it.

5000 (¼" scale) MACHINE TOOL AND EQUIPMENT TEMPLETS ON FILM!



165,000 MAN HOURS WERE REQUIRED TO PRODUCE THIS REPRO-TEMPLET, MASTER PLANNING FILE!

This Master Planning File of Machine Tools and Equipment Repro-Templets on Film, prepared to exact ¼"-scale from data supplied by the manufacturers, will be ready for June Delivery . . . . .

It is a completely new concept of time-saving and accuracy in preparing all types of layouts for the Metal-Working Industry.

CONSIDER THESE FACTS.

1. A reference file of almost every type of machine-tool and piece of equipment.
2. 150 machine-tool manufacturers. alphabetically arranged.
3. Each film sheet, comprised of most-used templets, clearly marked to show actual base outline and location, maximum operating outline, name and number of the machine.
4. The frosted film sheets, 12" x 18", are easily reproduced by any commercial method on film, blueprint, or photostat paper. You can produce any quantity of full sheets or as many selected templets as your job requires.
5. Used in conjuction with the repro-templet film grid sheets, these film templets, when coated with repro-pressure-sensitive adhesive, permit quick, exact layouts (transparent) in 1/20th the time formerly required.
6. Eliminate 90% of the paper-doll cutting.
7. Eliminate hundreds of hours of drafting time.
8. Provide a means of making quick, accurate layouts without tying-up engineers in preparatory work.
9. Hundreds of templets cheaper than you can prepare a single templet.

Non-production equipment, such as benches, tables, conveyors, office, cafeteria, stock rooms, stock racks, shop trucks, compressors, welders, paint booths, tanks, furnaces, pallets, skids, etc. are furnished in graded sizes—based on standard or stock dimensions.

A complete reproducible master file of over 5,000 accurately prepared repro-templets on frosted film is now available for the first time in engineering history.

Orders will be shipped starting in June, in the order in which they are received.

ENGINEERS TEST OFFER!

We just can't have a salesman call on each interested customer—there are too many . . . . so here's our engineers test offer.

Have your purchasing department request the sample page shown above, of Brown & Sharpe machines. It will be mailed your company on a no-charge basis.

It is identical in style and quality to all sheets in the file, and will permit you to reproduce the templets if you wish—and then decide the tremendous use value of the master planning file, for plant layout engineers.

Address Your Purchase Order for the Engineers Test Sheet of Repro-Templets on Film to — DEPARTMENT TEST REPRO-TEMPLETS, INC., OAKMONT, PENNA.

THE COMPLETE MASTER PLANNING FILE— AVAILABLE TO RATED FIRMS ONLY $650.00

INQUIRIES REGARDING FOREIGN REPRODUCTION AND SALES RIGHTS INVITED.

REPRO-TEMPLETS, INC. (DEPARTMENT 4F) OAKMONT, PA., (ALLEG. CO.)

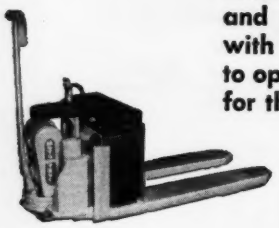
A TEAM-MATE OF "VISUAL" PLANNING EQUIPMENT CO., INC.

Circle No. 11 on Reader Service Card for more information

MOTO-TRUC'S MODEL PAL

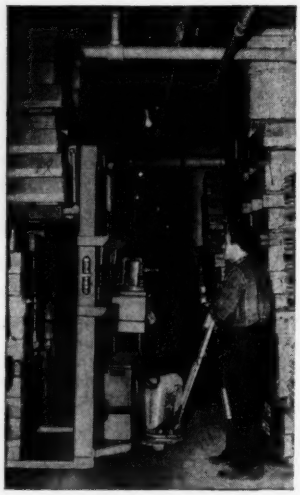
- Reduces Costs
- Saves Man Hours
- Speeds Production

Model PAL Pallet



Break those Production Bottlenecks and reduce handling manpower with Moto-Truc's efficient and simple to operate "Walkies". They soon pay for themselves in savings to you.

Whether its a problem of warehousing, production "Flow" or "Inprocess" inventory; one or more of Moto-Truc's 6 Basic Models is quickly adaptable to your specific needs. Their short turning radius and added power make them the most efficient in the "Walkie" field.



A "twist of the wrist" does it.

Model PAL-SC, Pallet

The above photo shows one of Moto-Truc's Model PALS in a large eastern warehouse. They now do the work of many hands, adding 1/3 more storage space and speed up "in and out" traffic. In Pallets, Platform or Hi-lift types, Moto-Trucs cover the field for efficiency, rugged, all-welded construction and ease of operation.

Write for Bulletin No. 51 Today

DON'T BE SATISFIED WITH LESS THAN THE BEST.

THE MOTO-TRUC CO.

1953 E. 59th STREET • CLEVELAND 3, OHIO
PALLET PLATFORM AND HI-LIFT TRUCKS
LARGEST EXCLUSIVE MANUFACTURER OF "WALKIES"

MOTO-TRUC — Designers FOR THE INDUSTRY — PATENTED

Circle No. 12 on Reader Service Card for more information

Association and Society News

• **At a recent meeting** of the Philadelphia Regional Division of the Society of Industrial Packaging and Material Handling Engineers, the following officers were elected for the year 1952: Theodore Clattenburg, U. S. Army, Signal Corps.—president; W. E. Soden, Sun Oil Co.—executive vice president; A. O. Manger, Rathborne, Hair & Ridgway Box Co.—vice president; Henry French—vice president; F. D. Edwards, Potts-Garrington Co.—Treasurer; R. F. Tettemer, H. G. Hanline Co.—Secretary.

• **The accounting council** of the Caster and Floor Truck Mfg. Assoc. met recently at the Wardman Park Hotel, Washington, D. C. under the chairmanship of E. L. Hummel, Rapids Standard Co., Inc. to discuss mutual problems of financial management. B. K. Grier, recently resigned general counsel for the Military Renegotiation Policy and Review Board spoke to the group on "The Increasing Importance of Re-negotiation."

• **"Procuring in Pack Lots"** was the subject of a talk given recently by W. B. McClelland of the W. B. McClelland Co., when he spoke before the Cleveland Chapter of the American Material Handling Society. Among the questions covered by the talk were: "What is the most economical purchasing unit?"; "What's transit handling?"; "What is a pack lot?"; and "How to save money in purchasing and receiving."

In the Association and Society News column of its March issue, FLOW erred in refering to Howard M. Palmer of Lewis Shepard Products Co. as "recently elected president of the Material Handling Institute." That post is held by L. West Shea of Union Metal Mfg. Co., and Palmer is 2nd Vice president. Our apologies.

Circle No. 13 on Reader Service Card for more information

PALLETAINERS
SPEAK FOR THEMSELVES!
Case histories prove the superior advantages of the PALLETAINER unit-load handling system. USP PALLETAINERS carry two-ton loads, stack securely, give full visibility, increase storage space, expedite flow of all types of materials. Ask us for an engineered application.
25%
PALLETAINER sides fold down to 25% of opened size for space saving returns—favorable return rates promote PALLETAINER shipping.
UNION STEEL PRODUCTS COMPANY
Materials Handling Division
ALBION, MICHIGAN
SYMBOL OF QUALITY
USP

How U. S. Rubber gives things a lift

U.S. Rubber Traction Top Conveyor Belt is mounted on the familiar jeep to speed ground handling of air cargo. Note how *round* cartons stay on belt despite steep incline.

This U.S. Traction Top Conveyor Belt allows cartons to be carried up steep inclines. When installed on a jeep, the belt becomes part of a highly mobile unit. This belt travels 80 feet per minute on a 30-degree incline, and carries as much as 2,500 pounds at a loading. So much greater is the efficiency of this belt over conventional types when handling material on inclines that it is now used in a variety of installations—for example, in post offices, flour mills, packing plants. It is weather-resistant and will not stiffen under extremely low temperatures.

This belt is another instance of how "U.S." engineers stay up front in the development and expansion of conveyor belt functions. Chances are they can solve your own materials handling problems. Write to address below.

Carrying merchandise in a Chicago warehouse, a **U. S. Rubber Crepe Top Belt** makes a bend at the second floor and continues at a steeper incline to the third floor without interruption.

PRODUCT OF U.S.RUBBER SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Circle No. 14 on Reader Service Card for more information

OSGOOD

MOBILCRANE provides unlimited mobility with one-man, one-engine operation

5156

Never before, such a versatile, profit-boosting material handling tool as OSGOOD Mobilcrane Model 825! *Unlimited mobility* with one-man, one-engine control of all operating functions (including travel) cuts job-time and overhead costs to a minimum whether the machine is used as a crane, clamshell, or log-loader. The Mobilcrane goes anywhere—over dirt roads, yards, wharves, or concrete floors—without damage to machine or underfooting. It picks up a load, travels four speeds either forward or reverse, and deposits the load anywhere within a 360 degree circle. Hydraulic steering . . . muscle-saving air control of swing, hoist, and travel motions . . . performance-smoothing OSGOOD Air Cushion Clutches . . . Independent Boomhoist . . . and many other outstanding features are standard. Write today.

The OSGOOD COMPANY

MARION, OHIO

AFFILIATED WITH THE GENERAL EXCAVATOR CO.

POWER SHOVELS, CRANES, DRAGLINES, CLAMSHELLS, PILE DRIVERS & HOES. CRAWLER, TRUCK OR WHEEL MOUNTED. DIESEL, GASOLINE OR ELECTRIC POWERED. CAPACITIES ½ TO 2½ CU. YD.

Circle No. 15 on Reader Service Card for more information

MORE SOLD THAN ANY OTHERS

Write for Catalog

OF USES AND SPECIFICATIONS

GENERAL

Industrial Pneumatic Tires

...SAVE TIME • LABOR • MONEY

Protect equipment and floors • Reduce Breakage

★ Wide Base Wheel
★ More Air Volume
★ More Stability
★ More Load Capacity
★ More Miles in Hi-Speed Service

Available separately or in assemblies of Tires, Tubes and Wheels. Size O. D. 8" to 27"—200 to 4000 lbs. cap. for low and high speeds.

Rigid CASTER FORKS *Swivel*

Wide-base caster forks engineered to carry heavier loads without adding dead weight to equipment. Available in identical pairs in a wide range of sizes.

SEND FOR CATALOG • DEPT. 2

THE GENERAL TIRE & RUBBER CO. AKRON, OHIO

Circle No. 16 on Reader Service Card for more information

MEN in the news

Leonard T. Sylvester
Mathews
Conveyor Co.

Foster W. Lamb
Automatic
Transportation Co.

. . . at Mathews Conveyer Co.

Leonard T. Sylvester, president and managing director of Mathews Conveyer Co., Ltd, Canada, was elected president of the parent company in the United States. He succeeds **William L. Dean** who died recently. Sylvester will continue as president of the Canadian firm in addition to his new duties.

In other board of directors action, **O. H. McCleary,** vice president, was elected to the office of vice president and general manager; **Lee Sekulski,** sales manager was elected to the board of directors, and **F. E. Moore** remains in his position as chairman of the board.

. . . at Automatic Transportation Co.

The new general sales manager is **Foster W. Lamb.** He will be responsible for direction of sales activities for all products lines according to **John A. Baldinger,** general manager of the company. Before accepting this new position, Lamb was product sales manager for the Buda Co.

. . . at General Electric Co.

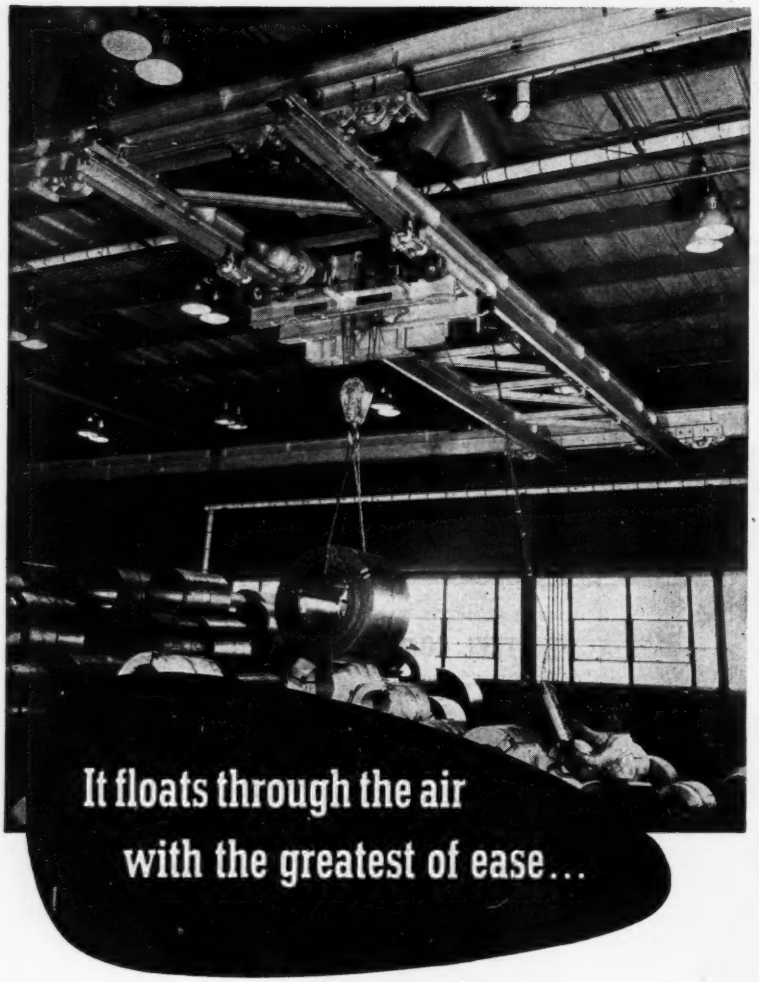
John T. Harrington has been appointed a Regional Manager for General Electric communication equip-

Acme Steel Strapping Insures S.A. *(Safe Arrival)*

ACME STEEL PRODUCTS DIVISION
ACME STEEL COMPANY
2858 ARCHER AVE., CHICAGO 8, ILL.

An estimated $160,000,000 was lost last year in goods damaged or lost in shipment. Cooperate with the Perfect Shipping Campaign, sponsored by the National Association of Shippers Advisory Boards, to help reduce this loss.

Circle No. 17 on Reader Service Card for more information



when handled by

AMERICAN MONORAIL CRANES

One man easily unloads, stores and moves seven-ton coils of steel with this 10-ton American Mono-Rail Crane. These cranes furnish efficient operation where low headroom is a critical problem. Interlocking devices permit carrier to travel beyond craneways. Loads are moved over maximum area. Articulated trolleys assure perfect alignment of trucks for smooth crane travel. American MonoRail Cranes are ruggedly built to handle loads up to 10 tons at operating speeds of 500 feet per minute.

Let an American MonoRail engineer tell you about these fast-moving constant-service cranes.

Please write us.

THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE • CLEVELAND 7, OHIO

Circle No. 18 on Reader Service Card for more information

Pat Lamb
Lull Mfg. Co.

R. Thomas Willson
Baker-Raulang Co.

ment. His headquarters will be at 963 Commonwealth Ave., Boston, and he will be responsible for sale of communication equipment in all New England states, New York, northeastern Pennsylvania, New Jersey, Maryland, and Virginia.

. . . at Lull Mfg. Co.

Pat Lamb is the new assistant manager according to a recent announcement by **L. H. Lull,** president. Lamb was previously district manager in the western states and western Canada for the company. He was replaced in that position by **A. L. Stains.**

. . . at Baker-Raulang Co.

R. Thomas Willson has been appointed advertising and sales promotion manager. He will direct all promotional activities in the company's line of industrial trucks and cranes. Willson comes from Yale & Towne Mfg. Co. where he was in charge of publicity and sales promotion.

Alfred E. Dorod and **Richard T. Tiebout** have been added to the Baker-Raulang staff of field engineers according to an announcement by **G. B. Davis,** vice president. Both men will be available for consultation on material handling problems and will also work on the development of new methods and special attachments for industrial truck users.

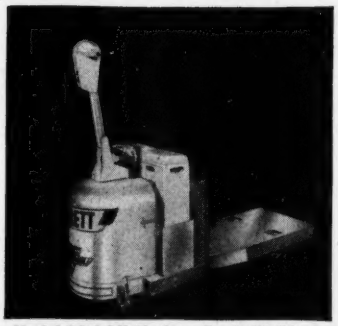
. . . at Minnesota Mining & Mfg. Co.

Promotion of Six key executives was announced recently. **Louis F. Weyand,** formerly a vice-president and member of the board was promoted to executive vice-president. **Robert W. Young,** president of

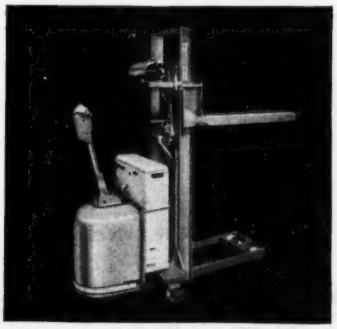
(Turn to page 22)

Easy does it... WITH BARRETT POWEROX ELECTRIC LIFT-TRUCK

PowerOx Model POK for quick handling of skid loads up to 4,000 lbs.



Model PO-POK Platform Truck. Walkie type for handling skids. Short turning radius. 4,000 and 6,000 lb. capacity.



Model PO-40 Hi-Lift Platform Truck. Speeds moving, lifting and stacking of skid platforms and boxes. 4,000 lb. capacity.

Pays for itself out of savings!

Lift and move your heaviest loads with the ease of electric push-button control. Handle any type skids . . . through production . . . around loading zones . . . in and out of storage . . . anywhere in your plant. 270 degree steering for congested area operation. The Barrett PowerOx quickly pays for itself with greater handling speed, low operating cost and easy maintenance features.

4,000 and 6,000 lb. capacities—narrow and wide models—lift, 4″ with 6″, 7″, 9″ and 11″ lowered heights. Variable platform lengths to suit your needs. Models also for handling single and double-faced pallets.

BARRETT-CRAVENS CO.
4619 S. Western Blvd., Chicago 9, Ill.
Representatives in All Principal Cities
Canadian Licensee: S. A. Armstrong, Ltd., Toronto, Canada

GET THIS HELPFUL, ILLUSTRATED CATALOG on the complete Barrett line of materials handling equipment. We'll mail it promptly upon request.

Barrett Handling Equipment

BARRETT

ONE MAN DOES MORE THAN 3 OR 4 . WITH A BARRETT

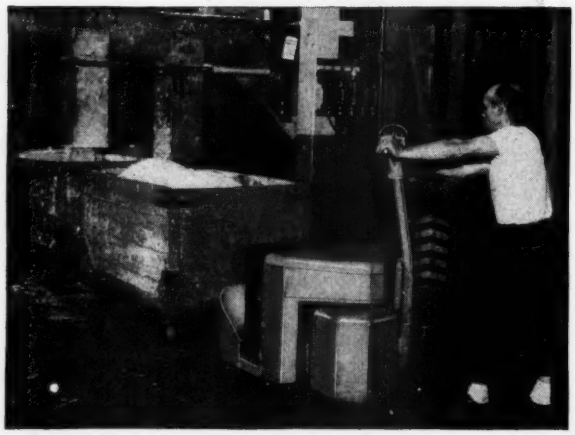
Circle No. 19 on Reader Service Card for more information

CUT MATERIALS-HANDLING COSTS WITH ELECTRIC TRUCKS...

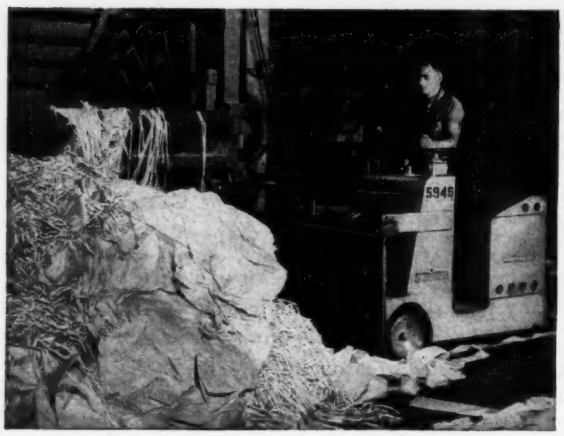
PAPER COMPANY SAVES $140,000 IN FIRST YEAR WITH $52,000 INVESTMENT!

Electric trucks equipped with G-E motors and control are used by the S. D. Warren Co., Maine paper manufacturers, as an integral part of their production operations. The company's initial investment of $52,000 in Lewis Shepard units has paid real dividends —in their first year of operation, these trucks have saved $140,000 in materials handling costs.

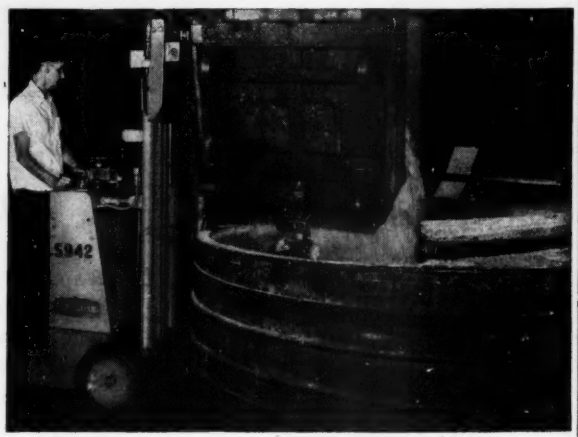
To keep materials flowing between processing points, the electric trucks operate 24 hours a day, 7 days a week. They handle over 400 tons of material and travel 8 to 40 miles daily.



Driver-lead truck pulls carts under chutes to be loaded with semi-dried processed pulp, which is then transferred to the "beater" tanks for further processing.



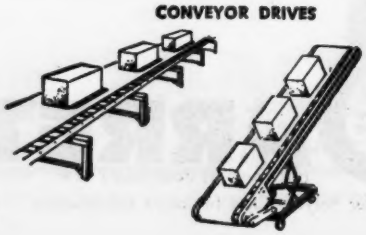
Feeding waste paper to shredder for reprocessing has been increased from 50 tons per day by manual labor to 70 tons per day through the use of a modified driver-ride truck.



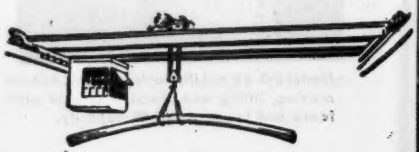
Pulp is dumped from carts into beater with driver-ride truck. Suitable trucks are also used to carry other raw materials required for paper-making from warehouse to production usage points.

Everything electrical for MATERIALS HANDLING

CONVEYOR DRIVES



CRANE DRIVES



POWERED by G.E.

Longer truck life, less maintenance and downtime with new G-E drives for electric trucks

- Magnetic control providing timed acceleration and electric braking minimizes abuse to electrical and mechanical parts of truck.
- More work per battery charge. Less power loss in resistor at reduced speed operation.
- Easy accessibility of parts simplifies maintenance.

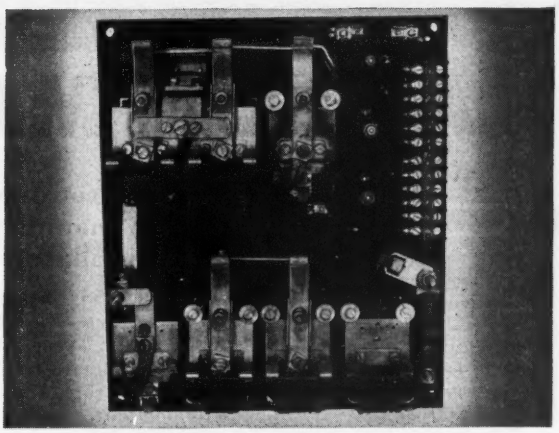
Add many other features to these and you'll see why the new G-E electric-truck drives give your trucks better availability, economy, and efficiency.

These new drives are the culmination of G.E.'s experience in manufacturing electric-truck drives, and long association with truck builders. They also represent years of electric-truck operating experience both in G-E plants and by other users. Ask your G-E representative for full details, including new Bulletin GEA-5630, or write to *General Electric Company, Section 669-3, Schenectady 5, N. Y.*

FREE! Write for a copy of this manual today!

As a service to the materials-handling industry, General Electric offers a free manual, "Materials Handling." Part of G.E.'s MORE POWER TO AMERICA program, it contains a comprehensive survey of materials-handling equipment, methods, and practices. Write on your letterhead for Bulletin GEA-4962. To go with the manual, G.E. also has produced the film "Materials Handling—In Receiving, Warehousing, and Shipping." Ask your equipment supplier or G-E representative to arrange a free showing for you.

Type BT Electric-truck motors—specially designed for round-the-clock, start-stop service. Large commutators, Class B insulation, easily accessible brushes are a few of their many outstanding features.



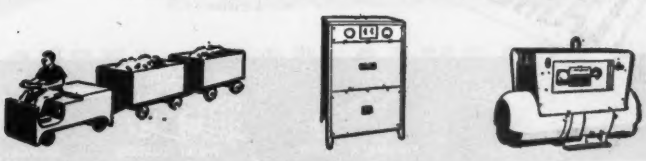
Magnetic Control—smooth operation, immediate response, fast acceleration, and minimum power consumption were primary considerations in designing the new control. Control-panel parts are easily accessible.

GENERAL ELECTRIC

669-3

HOIST DRIVES

INDUSTRIAL TRUCK DRIVES AND BATTERY CHARGERS



Want to Cut Your Handling Costs?

FRED W. SHAW
Lamson Field Engineer (New York Office) with 38 years' experience in reducing handling costs.

Call in the

LAMSON MAN

A few nationally famous companies using Lamson Materials Handling

American Thermos Bottle Co.
Anheuser-Busch, Inc.
Baltimore Markets, Inc.
Bristol Myers Co.
Carrier Corporation
Eastman Kodak Company
Endicott Johnson Corp.
General Electric Company
The Hoover Company
International Business Machines Corp.

Handling consumes 30% of every manufacturing dollar!*

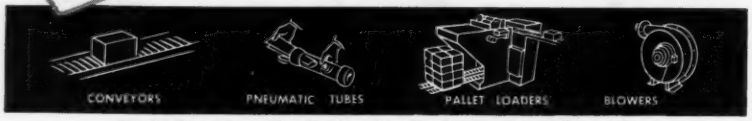
A Lamson Field Engineer has the broad experience—the field data and backing of a 71-year-old organization—to coordinate men, materials and machines into a more efficient production unit.

Let him help you eliminate wasted effort . . . speed production . . . cut costs. Write or wire: Lamson Corporation, 1300 Lamson St., Syracuse 1, N. Y.

Send for "Case Histories" Booklet. Proves Lamson know-how.

*Companies that have thoroughly checked handling costs find 30% a conservative average. Many run much higher.

LAMSON



Circle No. 21 on Reader Service Card for more information

Minnesota Mining & Mfg. International Co., a wholly-owned subsidiary handling foreign trade, was named chairman of that organization's board. **Clarence B. Sampair,** vice-president of 3M International, succeeded Young as president. Sampair also retained his post as a vice-president of the parent company. Vice-president **John A. Borden,** general manager of the cellophane tape division, was named sales and marketing consultant for all 3M tapes. The board also elected **George W. Swenson** and **Hubert J. Tierney** vice-presidents of the parent company.

. . . At Mideke Supply Co.

Joseph M. Mideke, vice president, died suddenly of a heart attack on Feb. 29. He had been in the hospital recently for an operation and was apparently well on the road to recovery from this when he was stricken. His firm is a distributor of material handling equipment in Oklahoma City.

. . . at United States Rubber Co.

United States Rubber Co. Tire Div. has announced the appointment of **A. J. Pegler** as manager, industrial tires sales, succeeding **J. C. Richardson,** who has been transferred to Philadelphia in the truck tire division. **H. W. Dodenhoff** has been appointed administrative assistant to the manager, truck tire sales.

. . . Lamson Corp.

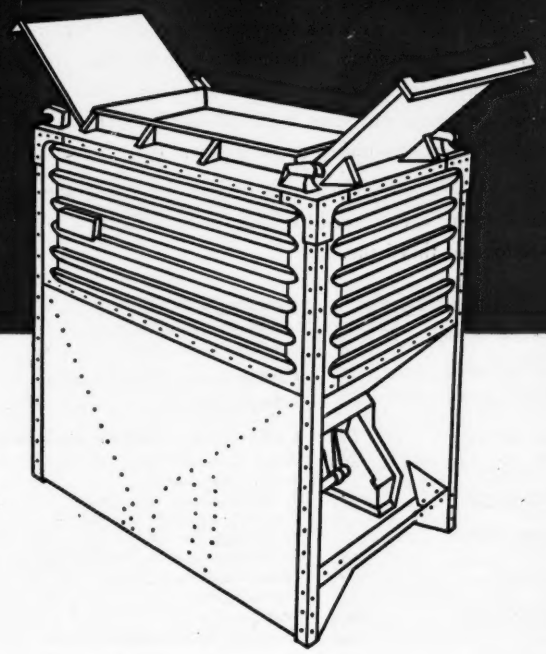
The appointment of **Angus M. Brown** to the position of manager of commercial sales was announced recently. In this capacity, he will direct sales activities on the company's line of pneumatic tubes, its vertical conveyors, and its Trayveyor.

. . . at Unistrut Products Co.

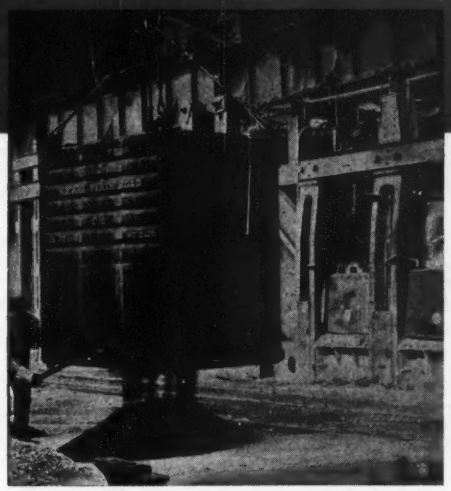
D. A. Brownlie has been appointed Western district manager according to **John P. Heslin,** vice president. He will supervise sales and distribution in the states of California, Arizona, Oregon, Washington, Utah, Nevada and Idaho, and in the Territory of Alaska. Headquarters will be in San Francisco.

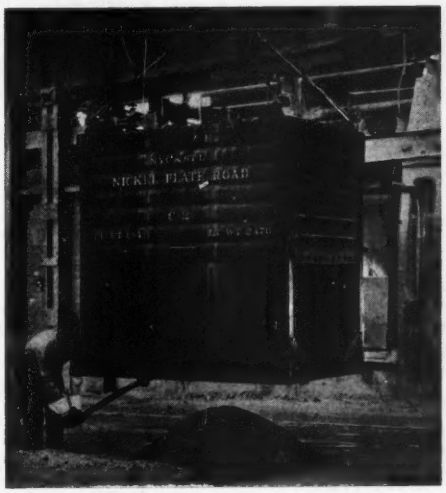
Important Facts

About YOUNGSTOWN'S Controlled Flow Containers For Handling Bulk Materials



YOUNGSTOWN controlled flow container in action.





1. Positive manual control of discharge of material.
2. Gear operated, easily controlled rotary discharge valve lying above the bottom of the container both when open and when closed.
3. Gears completely housed and protected.
4. Lightweight, rugged and weatherproof.
5. 145 cu. ft. capacity which can be varied to suit requirements.
6. Readily handled by a single drum hoist.
7. Top having weatherproof closure or open top as desired.

Consult with us for improved handling of your bulk materials.

YOUNGSTOWN STEEL DOOR COMPANY

CAMEL SALES CO. — CAMEL COMPANY LIMITED

CLEVELAND • CHICAGO • NEW YORK • YOUNGSTOWN

Circle No. 22 on Reader Service Card for more information

Saves Time-Labor
Speeds Performance
MAGNESIUM RAMPS
for TRUCK DOCKS
PENCO

1000 lbs. to 5000 lbs. Capacity

One Man Operation

- ★ Light Weight
- ★ Easily Placed in Position
- ★ Easily Removed
- ★ Easily Transported
- ★ Easily Adaptable

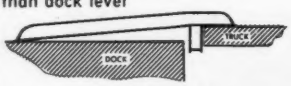
Trucks back within 3 inches of dock

Penco Engineering Co., pioneer Safety Type Ramp manufacturers, presents the most compact, the most simplified, modern and lightweight Magnesium Ramp for all Truck Docks. Instantly put into use—accommodates trucks either higher or lower than dock level. Eliminates platform congestion.

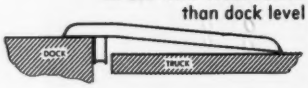
SPEEDS-UP Truck Loading & Unloading Operations

Penco Truck Ramps are all-welded, sturdily constructed of Safety Tread Plate—crowned to compensate for height differences—has beveled edges and safety side rails—meets every safety factor. No adjustments necessary—"STOP" holds ramp securely in position—nothing to get out of order. Hundreds now giving complete satisfaction.

In use with Truck **higher** than dock level



In use with Truck **lower** than dock level



Cut Your Labor Costs With Modern Penco Ramps

Penco, also manufactures Steel Ramps for Truck Docks, Magnesium Car Loading Ramps and Steel Car Loading Ramps.

Free Illustrated Literature

PENCO ENGINEERING CO.
25 California St., San Francisco 11, Calif.

Send us Free Illustrated Literature on:

- ☐ Magnesium Truck Loading Ramps
- ☐ Magnesium Car Loading Ramps
- ☐ Steel Truck Loading Ramps
- ☐ Steel Car Loading Ramps

Firm_____

Individual_____

Street_____

City_____ State_____

Circle No. 23 on Reader Service Card

An Easy Index to This Month's Advertisers

Looking for a particular type of equipment? Listed below are the advertisers in this issue according to the type of product they manufacture. While each company is not listed under every product they make, we have attempted to make your job a little easier by listing them as often as possible.

Because of space limitations, we were forced to list some companies under the category "Specialized Equipment". Under this classification you will find such items as motors, hydraulic tail gates, powered barrows, line markers, etc. We suggest that for any equipment other than that listed under the main headings, you consult the advertisers under this category.

And for additional information on all types of material handling equipment, be sure to use the Reader Service Card for data found in the new product and free literature sections of this issue.

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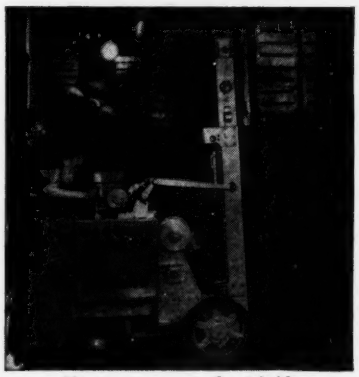
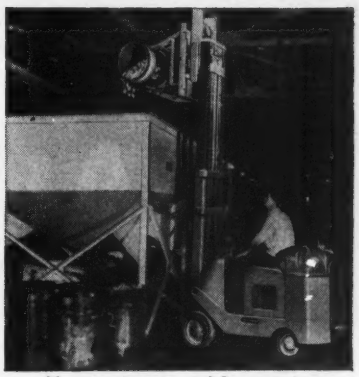


Temporary storage of perishables

Hauling materials for loading



Transporting material for processing

Hauling materials

Moving cooling racks

Inter-plant hauls

TW TIRE AND WHEEL ANALYSIS POINTS THE WAY TO SAVINGS FOR ALL MATERIALS HANDLING

Here's the TW Analysis Plan:

- Specially-trained BFG representatives will analyze your operation.
- They'll study your equipment, floors and hauling surfaces.
- They'll make impartial recommendations regarding tire and wheel types and sizes.
- They'll *help* you—or your materials handling engineers get better service from your industrial tires and hauling equipment.

Use the coupon for complete information.

A similar plan is available for manufacturers of industrial hauling equipment.

only B. F. Goodrich has a complete line of industrial tires.

The B. F. Goodrich Co.
Department TW-172
Akron, Ohio

Please give me additional information on your new Tire and Wheel Analysis plan.

Name_____

Title_____

Company_____

City_____ State_____

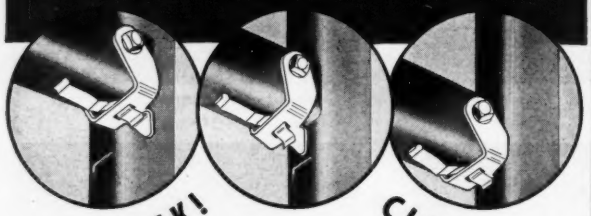
Circle No. 24 on Reader Service Card for more information

The ONE and ONLY adjust-o-matic RACK

AMERICAN

RATCHET RACK

adjustable without bolting



. . and the rack-shelf is in position

- No waste space . . . more storage space per sq. ft.
- Built for any size pallet skid or box.
- Let us tell you more . . . send for literature.

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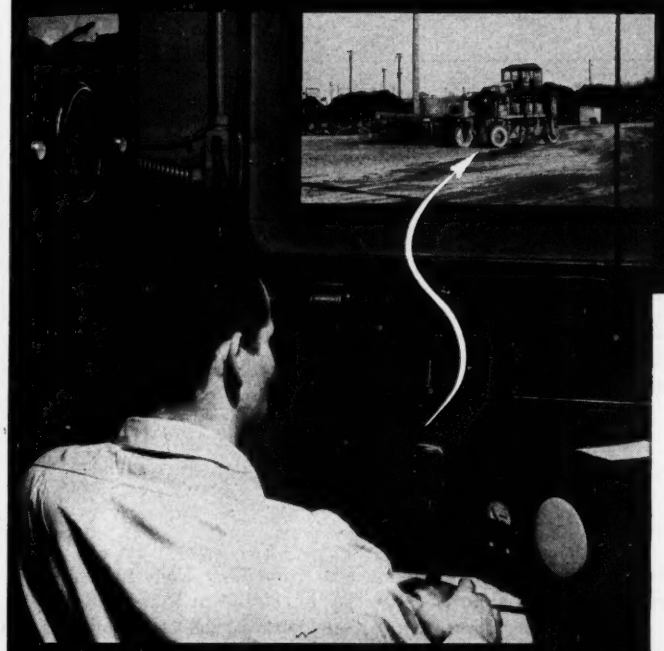
Motorola 2-Way Radio

-Speeds- Materials handling



At **Timken** Roller Bearing Company a dispatcher with the help of Motorola 2-way radio maintains steady flow of material from yards to finishing departments.

Timken's fleet of huge straddle trucks deliver 3.34 more bales per truck, per hour—quickly paying for the Motorola units out of increased operation profits.

The figures are convincing.

Your plant too can beat its own production records with Motorola 2-way radio—saving time, costs, outage and dead mileage—keeping your production lines in gear from dock to dock.

You're right the first time with Motorola.

It costs less to install and maintain, year after year, than all others.

With eight leading developments years ahead of the field, including the famous "Sensicon" sealed selectivity, your investment is safe from obsolescence.

So be ahead and stay ahead with Motorola.

Remember there are twice as many Motorola's as all others combined—with *the reason* built into every one.

Experience Counts! OVER 22 YEARS OF LEADERSHIP IN MOBILE RADIO!

It costs you nothing to find out—from a qualified Motorola engineer. Don't delay! Wire, phone or write for immediate and generous information.

Motorola

Communications and Electronics Division
4501 AUGUSTA BLVD. • CHICAGO 51
In Canada:
Rogers Majestic Electronics Ltd., Toronto, Ont.

Circle No. 26 on Reader Service Card for more information

NEWS VIEWS TRENDS

TROUBLES WITH INTER-FLOOR HANDLING?

In answer to many letters, we are presenting in this issue 13 ideas on how to handle goods between floors. If you operate in a multi-story building, and your flow isn't everything you want it to be, take a look at this article beginning on page 55. It may contain some answers to your problems.

NEW ADDRESSES TO FILE

Edlefsen-Weygandt Co. announced recently the removal of its offices to Canby, Oregon. The old location remains as a warehouse only. The new address is P. O. Box 885, Canby, Oregan.

General Box Co. held an open house recently to show off its new office and laboratory. The address: 1825 Miner Street, Des Plaines, Illinois.

Hewitt-Robins Inc. moved its headquarters offices from New York to Stamford, Conn. The Eastern Division and Export Sales offices of the Hewitt Rubber, Restfoam and Robins Conveyors Divisions will remain in New York as will offices of Robins Engineers division.

Lull Mfg. Co. now occupies a complete new plant located at 314 West 90th Street, Minneapolis 20, Minnesota. The large new modern manufacturing plant was built to satisfy an increased demand for Lull construction and material handling equipment and to accommodate the production and development of its expanded line of quality products.

COMPLETE DATA ON CRANES AND SHOVELS

If you are now using, or are planning to use power cranes or shovels, you'll be interested in a two-part story beginning in this issue. The first installment covers selection, types, applications and general operating information. Part II, which will be in next month's issue, will give details on maintenance.

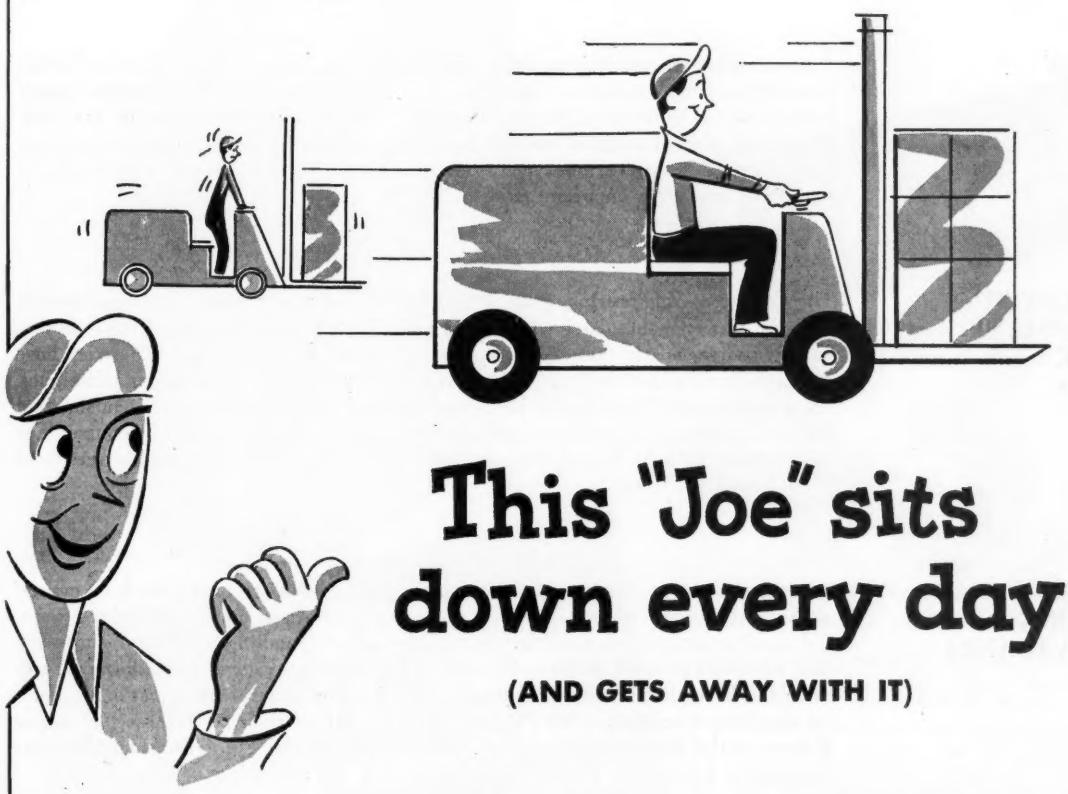
DATES TO REMEMBER

21st National Packaging Conference and Exposition . . .
Among the topics to be discussed will be: "Reducing Packaging Costs", "The Trend to Packaging Self-Service", and "What's Ahead for Packaging." A 2½ day conference as well as a four-day exposition is being held in Atlantic City April 1-4. Sponsor is American Management Association.

Industrial Packaging Engineers . . .
October 14, 15, and 16 have been announced as the dates for the 7th annual exposition of the Society of Industrial Packaging and Material Handling Engineers. Site will be the Chicago Coliseum.

ARE YOU CLOSING CONTAINERS PROPERLY?

Does your packaging department know the correct methods of closing corrugated cartons. Proper use of gummed and pressure sensitive tape and proper placement of staples can mean better results from your containers. You'll be interested in a story in the Packaging and Shipping Section of this issue which details this important subject. Drawings show you where and how to close for best results.



This "Joe" sits down every day

(AND GETS AWAY WITH IT)

Ever subject yourself to thousands of daily jolts and jars? Then you know why Joe's former "stand up" habit was a natural one. But the company got wise to the excessive cost of jolting lift trucks and started a replacement program—equipping new, and old lift trucks with MONARCH MONO-CUSHION TIRES. Now, Joe gets a soft ride and the company saves money on floor and truck maintenance.

Your best source for replacement tires is the manufacturer of your vehicles, who can supply you, through his distributors, with Monarch Tires engineered for your application.

THE MONARCH RUBBER COMPANY

501 LINCOLN PARK • HARTVILLE, OHIO
DETROIT OFFICE, 7-255 GENERAL MOTORS BLDG.

SPECIALISTS IN INDUSTRIAL SOLID TIRES AND MOLDED MECHANICAL RUBBER GOODS

Circle No. 27 on Reader Service Card for more information

QUICKEY COURSE

A short course on material handling, presented by the Georgia Tech School of Industrial Engineering, covered a wide range of material handling problems in two tightly packed days of lectures on March 20 and 21. Included were discussions on the background and present status of material handling, engineering approach to material handling, material flow in various types of industries, selection and application of the proper equipment, and other important related subjects.

THIRTEENTH MANAGEMENT COURSE SLATED

The College of Engineering, State University of Iowa, announces that its thirteenth Summer Management course will be held June 9-21 in Iowa City. Since the inception of this course, nearly 900 representatives of American and foreign industries have increased their understanding of the design and application of the major techniques. The regular State University of Iowa teaching staff will be augmented by outstanding men from a variety of industries and other educational institutions for the course. For information, write to Wayne Deegan, 113 Engineering Building, State University of Iowa, Iowa City, Iowa.

BRITISH HANDLING EXTRAVAGANZA

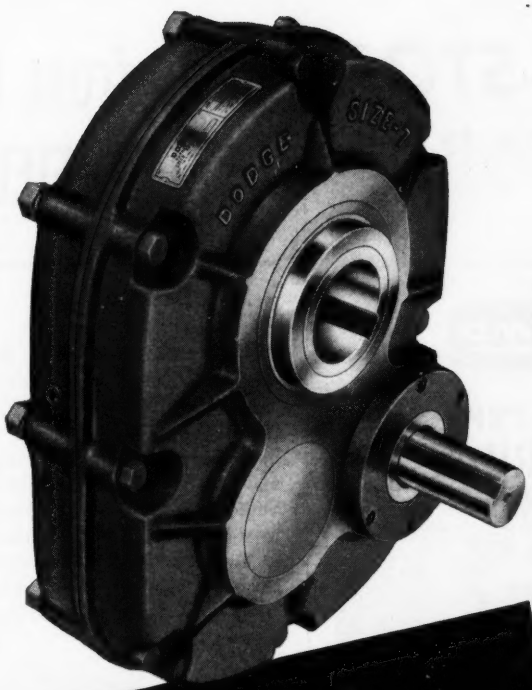
Advertised as the world's largest display of conveyors, elevators, hoists, stackers, cranes, mechanical loaders, fork lift trucks, industrial trucks, overhead runways, aerial ropeways, and auxiliary equipment, the Third British Mechanical Handling Exhibition & Convention, scheduled to run from June 4 through 14, is in its final stages of planning. It will be held in Olympia (Grand and National Halls) London under the auspices of Mechanical Handling Engineers Assoc., Industrial Truck Mfgs. Assoc., The Assoc. of Crane Makers, Aerial Ropeways Assoc., and The Foundry Trades Equipment and Suppliers Association, Ltd.

EIGHT COMMITTEES INDICATE BIG YEAR FOR MATERIAL HANDLING INSTITUTE

To carry out the most ambitious year of service ever undertaken by the Material Handling Institute and its 78 member manufacturing companies, L. West Shea, M.H.I. president and manager of material handling sales, the Union Mfg. Co. has announced the organization of eight committees. A Planning Committee under the chairmanship of W. H. Noelting, Faultless Caster Corp., will define and evaluate long-term benefits of the Institutes activities. The Industry Service Committee under chairman George R. Brockway, vice-president sales and advertising, Rapids Standard Co., Inc. is launching a program of sponsoring symposiums and conferences, publishing reports and surveys and developing speaker presentations on material handling. The Exposition Committee will work to develop a bigger-than-ever 5th National Material Handling Exposition slated for Philadelphia during May, 1953. Chairman is John C. Mevius, sales manager, material handling and hydraulics division, American Engineering Co. Mevius will also chairman the 1952 Washington Committee which will work closely with the Washington offices of the M.H.I. and N.P.A. on allocation problems. M.W. Heinritz, vice-president, Gould-National Batteries, Inc., will chairman a group on cooperation with the American Material Handling Society. H. M. Palmer, general sales manager, Lewis-Shepard Products, Inc., will head a committee on industry educational activities. A finance and budget committee will be chairmanned by E. W. Allen, manager of engineering, Edison Storage Battery Division, Thomas A. Edison, Inc., and a membership committee will be under the supervision of E. J. Byrne, assistant sales manager, Chisholm-Moore Hoist Corp.

COLES CRANES NOW MADE IN U. S. A.

Coles Cranes are now coming off the production line of a new plant opened by Coles Cranes Inc. in Joliet Illinois. Although these mobile cranes have been used in this country for many years, this is the first time they have been manufactured here. Parent company is located in England.



A NEW SIZE!

43 H.P.

DODGE TORQUE-ARM

The Speed Reducer that saves you real money!

Here it is—the big size that enthusiastic Torque-Arm users have been asking for! Engineered for the same dependable performance and same economy that have made Dodge Torque-Arm Speed Reducers a nation-wide sensation.

- The new "big brother" of the famous Torque-Arm family. Double reduction. 43 hp capacity. Output speeds from 12 to 110 rpm.
- Rugged. Dependable. *Economical.* No special engineering required. No foundation to provide. No flexible couplings. No "lining up" difficulties. No expensive installation.
- Stock TAPER-LOCK sheaves prescribed for each job provide desired speeds. Applications to other machines is practical and easy.
- Unit is driven through any V-belt drive. A torque arm, fastened to any fixed object, anchors the reducer unit. Turnbuckle provides fast and accurate adjustment of belt tension.
- Backstop available from stock when required. Easily installed. Sealed and lubricated inside reducer housing.
- Dodge Tri-Matic Overload Release, which provides positive protection for driven machines both mechanically and electrically, is available from stock.
- Dodge Torque-Arm Speed Reducers are built in two series—Single and Double Reduction. Eleven sizes in all, with capacities from 1 to 43 hp and output speeds from 13 to 333 rpm. All available from distributors' stocks.
- WRITE for special Torque-Arm bulletin.

DODGE MANUFACTURING CORPORATION
2300 Union Street • Mishawaka, Indiana

DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable assistance on new cost-saving methods. Look for his name under "Power Transmission Equipment" in your classified phone book.

SEALED-LIFE V-BELTS AND TAPER-LOCK SHEAVES

DODGE-TIMKEN PILLOW BLOCKS

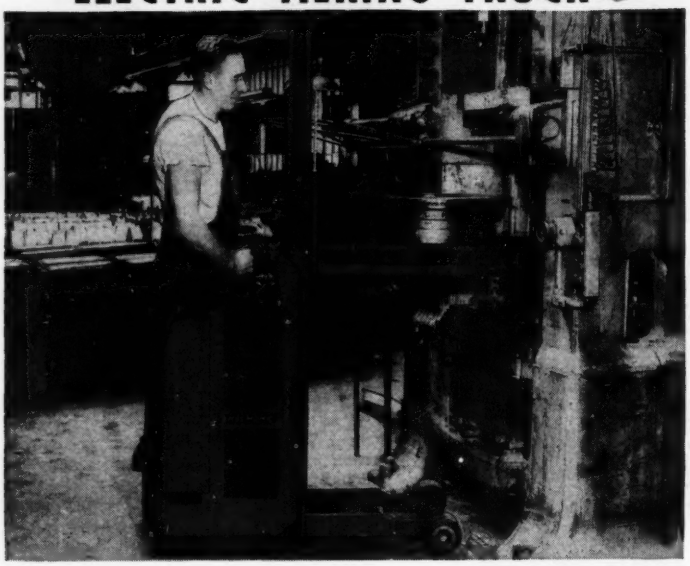
SOLID STEEL CONVEYOR PULLEYS

NAME PLATES

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY, CHICAGO THRIFT-ETCHING CORPORATION, 1555 SHEFFIELD AVENUE, CHICAGO 22, ILLINOIS

Circle No. 28 on Reader Service Card for more information

NON-STOP
from tool room to press
VIA
RAYMOND
PLATFORM-TYPE
ELECTRIC TIERING TRUCK



- Now, load up the die in the tool room . . . go non-stop (up to 3½ mph) through narrow aisles and crowded production areas . . . and position it right at the machine with this RAYMOND Platform-Type Electric Tiering Truck! There'll be no wasted work-time, no halt in production because one man can do the whole job alone.
- Put this RAYMOND Tiering Truck to work on your production floor or use it for warehousing or shipping . . . it will go anywhere a hand truck will go!
- What's the secret? The truck's short length and patented* offset drive wheel with 200° turning arc. It features a patented* knee-action swivel caster to compensate for uneven floors . . . comes in both 2,000 and 4,000-lb. capacity models.

The RAYMOND CORPORATION
Formerly LYON-Raymond Corporation
3368 Madison St., Greene, N.Y.

Please send me Bulletin 710 on your Platform-Type Electric Tiering Truck. I'm interested in a demonstration: ☐ Yes ☐ No

Name ..... Title .....
Company .....
Street .....
City ..... State .....

Bulletin 710 gives you the facts . . . send for it today! Ask to see the *RAYMOND* Platform-Type Electric Tiering Truck demonstrated.

* Patent No. 2,564,002

RAYMOND
ELECTRIC INDUSTRIAL TRUCKS
HYDRAULIC ELEVATING EQUIPMENT

Circle No. 29 on Reader Service Card for more information

news from the SALES FIELD

C. Raymond Ahrens, Inc., has announced that **A. L. Sutherland** has joined its sales department. The firm is distributor for a line of material handling equipment including hoists and cranes, grabs, scales and trolleys. Sutherland will serve as representative in the Cleveland and northern Ohio area. He was formerly associated with Manning, Maxwell & Moore and brings 30 years of crane and hoist experience into his new position.

An open house was held recently by **Central Materials Handling Corp.,** 2917 Central Ave., Indianapolis 5, Indiana. The purpose of the affair was to give customers a mental picture of the company's facilities, to permit them to view new equipment demonstrations, and to permit them to talk with factory engineers.

Howard C. Lemire Co. of St. Paul has been appointed district representative in North and South Dakota, Minnesota and northwestern part of Wisconsin for the Hertner Electric Co., manufacturer of industrial-truck battery chargers and motor generators. Associated with **Howard C. Lemire,** head of the company are his son, **Howard C. Lemire, Jr.,** and **Harvey E. Brownson.** The Hertner Co. now has active representatives in 17 areas from coast to coast.

The Elwell-Parker Electric Co., manufacturers of power industrial trucks has appointed the **Gogerty-Reynolds Supply Co.,** Omaha, Nebraska to handle sales of its trucks and cranes to railroads operating out of Omaha. **John Gogerty,** one of the partners in the firm recently retired as general superintendent of motive

power and machinery for the Union Pacific at Omaha, after nearly 50 years railroad service. Both he and **John M. Reynolds,** the other partner are well versed in railroad requirements and are familiar with the application of power industrial trucks. Offices are at 619 National Bank Bldg., Omaha 2, Nebraska.

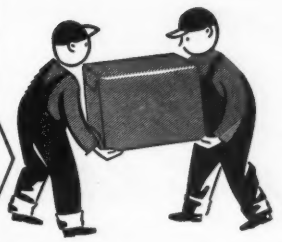
The opening of a new Cleveland distributing firm, **The Industrial Tire Co.,** has been announced by **Alan Hartzmark,** sales manager. The company, located at 3011 Independence Rd., will handle the complete B.F. Goodrich Co. line of industrial tires. In addition, the firm will represent the Bassick Co., The Market Forge Co., The Kilbourne-Jacobs Mfg Co., and the Re-Bo Mfg. Co. Additional lines will be added in the near future.

The material handling division of the **Market Forge Co.,** has announced the appointment of the **Johnathan Handy Co.,** 38 Bethel Street, New Bedford, Mass., as its local distributor in that area. **Jack Somers** will be in charge of sales of the line of material handling equipment, including lift trucks, electric and hand operated, floor trucks, conveyors, racks, containers and specialized equipment.

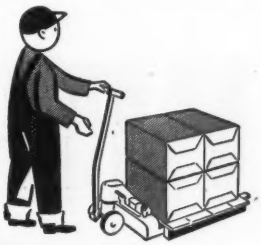
C. T. Hansen and Co., Russ Building, San Francisco, has been appointed west coast agency for Sahlin Engineering Co. Products to be handled include automatic press unloaders and special material handling devices.

J. W. Eyler has been appointed to the sales staff of **J. K. Mahaffey & Son,** Jenkins Arcade Bldg., Pittsburgh. He was previously employed at the Westinghouse Air Brake Co., Wilmerding, as a material handling engineer. The Mahaffey organization specializes in material handling engineering and is the Pittsburgh area distributor for handling equipment manufactured by the **Baker-Raulang Co.**

This man's WASTED



This man ISN'T



RAYMOND

Lightweight **LIFT TRUCK makes the difference**

BEFORE— two men or more struggled to handle heavy loads. What a waste of precious work-time!

NOW— one man plus a RAYMOND Lightweight Lift Truck handles 1-ton pallet loads with ease. The secret? Hydraulic power does all the lifting — a few quick pumps on the convenient foot pedal and the load's ready to be moved.

RAYMOND Lightweight Lift Trucks are so maneuverable they squeeze into hard-to-get-at places. Pallet entry is smooth and effortless — lateral movement, fast and easy. Use them to lighten rush hour handling — speed up short hauls — release power trucks for long hauls and tiering.

MODEL L2P

RAYMOND Lightweight LIFT TRUCK for double-face pallets illustrated. Also in Heavy-Duty Models with 2 or 3-ton capacities.

MODEL EL4F

SPEEDS UP TO 6 MPH!

RAYMOND Low-Lift Rider-Type Electric Truck. Ideal for long hauls, stock picking, loading, unloading. Capacity 2 tons.

The RAYMOND CORPORATION

Formerly LYON-Raymond Corporation

3372 Madison St., Greene, N.Y.

Gentlemen: Please send me the Bulletins indicated: 223, Light-weight Lift Truck; 222, Heavy Duty Lift Truck; 750, Low-Lift Rider Type Electric Truck.

NAME..... TITLE.....

COMPANY.....

STREET.....

CITY..... STATE.....

Circle No. 30 on Reader Service Card for more information

We have named the 3rd method---

FRANCHISE

Audited by C. C. A.

Everyone who is engaged in the business of advertising knows about the two methods of circulation —"paid" and "free." Regardless of the fact that each method has certain inherent advantages and disadvantages, there are fine publications using one or the other method of obtaining circulation.

There is, however, a third and different method of circulation which has come to the front in recent years because of its unusual power to reach the individual upon whom the advertiser's sales representatives call.

This 18-year-old method of circulation audited by C. C. A.—proven in five of the six separate fields served by our publications—is now identified as FRANCHISE CIRCULATION.

In five of these six fields we serve, there are firms throughout the nation classified as agents, distributors, wholesalers or jobbers that know the active buyers in each locality. These firms, carefully selected in every basic marketing area, are franchised by us, and so we have named this the FRANCHISE method of obtaining circulation. Franchise holders agree to do these things:

1. They agree to select and identify the active buying companies and the correct individual in each of these companies who specifies and/or purchases the advertiser's product.
2. They agree to pay for subscriptions to these individuals.
3. They agree to keep these lists up-to-date and send in all changes of names, removals, and additions as rapidly as they occur.

As a result, a circulation of active buyers is built and kept up by the salesmen of these authenticating, local wholesalers. Because each salesman calls on his customers and prospects frequently and is, therefore, immediately aware of personnel changes, circulation by the FRANCHISE method is never old. It is kept constantly fresh. As publishers we exercise our normal controls, but added to these is the wholesaler's control, because the wholesaler pays for every name on his list for whom he subscribes.

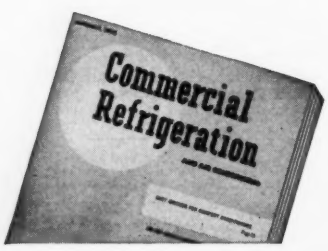
FRANCHISE CIRCULATION parallels all proven methods of selling. Salesmen seek out the firms who are in the market, and then find the correct man in the firm.

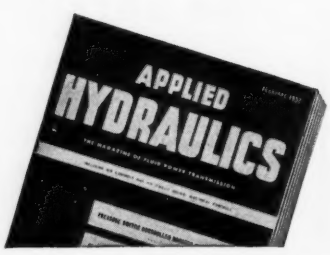
FRANCHISE CIRCULATION follows the same principle exactly. Names of people or companies, size, or titles do not count unless they are active buyers of the type of product you have to sell. *By this method, we believe, you secure the finest type of circulation it is possible to provide.*

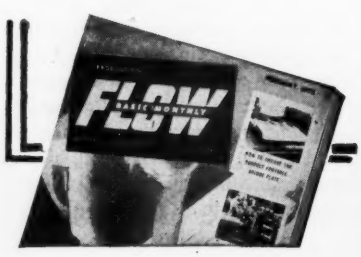
Five of the six publications shown below use the FRANCHISE CIRCULATION method.* If you would like to know the rest of the story of why FRANCHISE CIRCULATION works so well for advertisers, send for this free booklet today—it may well be worth thousands of dollars to you!

INDUSTRIAL PUBLISHING COMPANY

1240 Ontario Street • Cleveland 13, Ohio







our 18-year old proven method of circulation—

CIRCULATION

FRANCHISE

This is to certify that

_____

has been granted the exclusive right to sponsor the circulation of

in its trading area. This right is extended because of this company's intimate knowledge of the personnel interested in the design, use and maintenance of hydraulic and/or pneumatic power systems in this territory, and because of its continuing efforts to promote the effective use of this equipment among its customers.

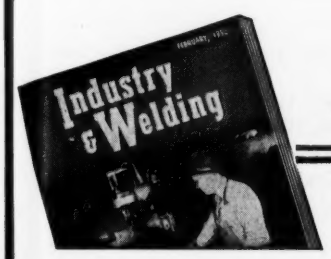
This right to subscribe for APPLIED HYDRAULICS for its customers and prospective customers for such a length of time as it so chooses is implicit in this franchise.

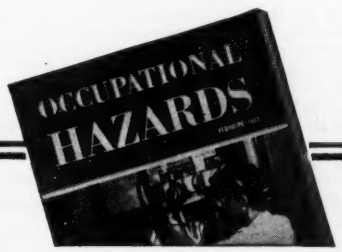
ISSUED AT CLEVELAND, OHIO
THIS ____ DAY OF _____, 1952

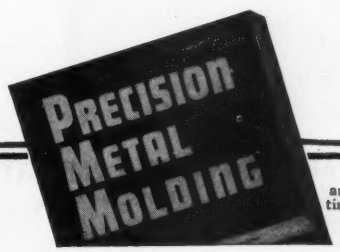
By_____
PUBLISHER

Replica of typical certificate issued to the selected agent, distributor, wholesaler or jobber firm which, by agreement, certifies the active buyers in its industry in its locality.

Audited by C. C. A.







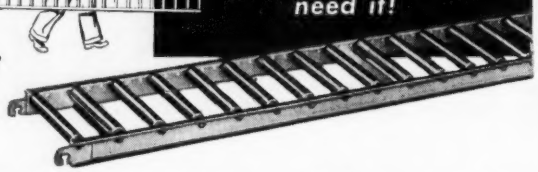
*No authenticating agents in this field.

MODERN TIME and COST SAVERS BUILT BY... Standard GRAVITY & POWER CONVEYORS

Standard LITEWATE *Sectional Roller Conveyor*

LIGHT AND EASY TO CARRY

Put it where you need it!



— ideal for loading and unloading trucks and conveying jobs that require moving about — one man can easily pick up and carry a section or curve with little effort. Handles commodities weighing up to 60 lbs. — moves bags, cases, cartons, hollow bottom, narrow, cleated and irregular packages or articles not suited to wheel conveyors. Available in 10 ft. and 5 ft. straight sections and 90° and 45° curves. Write for Bulletin 63 B — address Dept. FL-42.

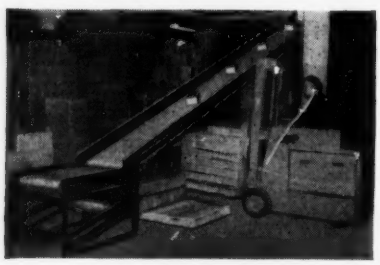
Standard All Purpose Roller Conveyor

— available in a complete line of roller sizes and capacities designed to allow the selection of the best roller for the job, from a 1 inch diameter roller, capacity 35 lbs., to a 3½ inch diameter with a capacity of 550 lbs. Any commodity with one smooth riding surface can be carried — boxes, cases, cartons, lumber, milk cans, brick, building tile. Straight sections and 90° and 45° curves. Write for Bulletin 63 B — address Dept. FL-42.

Faster Handling in Shipping Rooms with the HANDIBELT

— conveys bags, cartons, boxes horizontally or at any decline and incline angle within its range. Easily wheeled about by one man — easy to adjust and use — fits in crowded aisles, cars, freight elevators. Handles packages up to 135 lbs. Can be placed in series to form a complete conveyor line. Available in 3 sizes: No. 11, No. 16, and No. 21 with 14 and 21 inch belt widths. Write for Bulletin No. 63 B — address Dept. FL-42.

Lift or Lower . . . Floor to Floor . . . with the INCLINEBELT



— move boxes, cases, cartons, sacks or bundles from basement to first floor, or any floor to floor — continuously. Compact, simple to install — minimum maintenance. Lift or lower 10 to 20 lbs. of live load per ft.; floor elevations of 8 ft. to 14 ft. 6 inches inclusive; belts widths — 8, 12, 14, 18 and 24 inches for commodities of various sizes. A horizontal feed section is generally used to deliver commodities to the Inclinebelt. Write for Bulletin 63 B — address Dept. FL-42.

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minnesota

Sales and Service in Principal Cities

Send for Standard Bulletin 63 B describing gravity and power conveyors units — address Dept. FL-42.

Circle No. 32 on Reader Service Card for more information

Literature featured in ads

"Power Magic" is the title of literature offered by Wisconsin Motor Corporation describing their 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder engines, 3 to 30 hp.

Circle No. 142 on Reader Service Card

You can eliminate long trips to central charging stations by locating Rectox chargers throughout your plant, says Westinghouse Electric Corporation. A copy of DB-19-040 gives more data.

Circle No. 1 on Reader Service Card

The U.S. Traction Top Conveyor Belt allows cartons to be carried up steep inclines, and can be installed on a jeep to become part of a highly mobile unit. Let United States Rubber Company furnish you with more details.

Circle No. 14 on Reader Service Card

Whether your plant is 10-man or 10,000-man, let Truck-Man Division of The Knickerbocker Company prove there's a place for their industrial trucks and tractors in your plant. Latest catalog is available.

Circle No. 53 on Reader Service Card

Complete details on how to increase production and lower costs with Zig-Zag Continuous Power Conveyors are available from Richards-Wilcox Manufacturing Company.

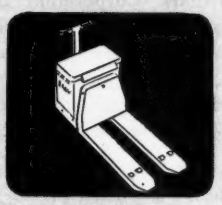
Circle No. 60 on Reader Service Card

The Osgood Company would like to tell you about their Mobilcrane Model 825, which features unlimited mobility with one-man, one-engine control of all operating functions whether used as a crane, clamshell or log-loader.

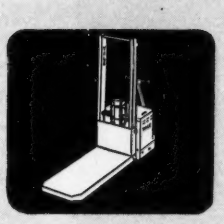
Circle No. 15 on Reader Service Card

Bulletin 1570 from The Buda Company describes their new FT Series of fork trucks. Fourteen standard models are available, in capacities up to 7500 pounds.

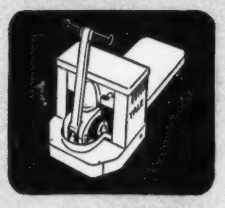
Circle No. 45 on Reader Service Card



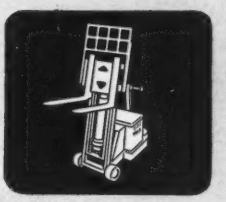
Pallet Worksaver



High-Lift Platform Worksaver



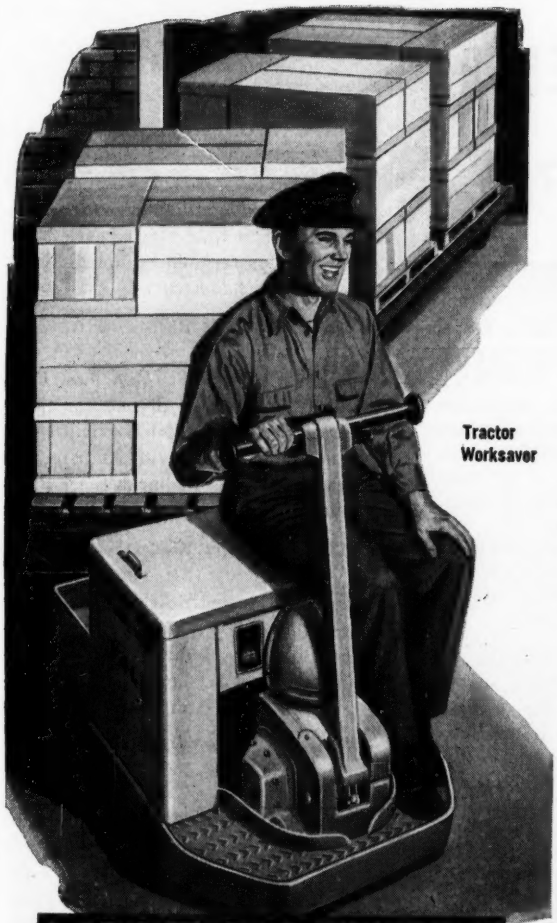
Platform Worksaver



High-Lift Fork Worksaver

GET HEAVYWEIGHT SERVICE FROM WELTERWEIGHT TRUCKS

YALE *WORKSAVERS*



Tractor Worksaver

USE *WORKSAVERS*

in moves involving freight elevators. YALE WORKSAVERS may be carried safely on the elevator with the load, eliminate reloading and relifting.

USE *WORKSAVERS*

on low-load floors. Mechanize areas out-of-bounds to heavier trucks with speedy, dependable, low-cost YALE WORKSAVERS.

USE *WORKSAVERS*

in tight storage areas. They're easy to manage in narrow aisles; save time, cost and effort in moving and storage operations.

YALE WORKSAVER Electric Trucks lift, stack and carry loads up to 6,000 lbs., and may be used in many areas where weight or space rule out big-truck use. Low in initial cost, economical in operation, and simple for anyone to use—their performance meets the quality standards that industry identifies with YALE Industrial Trucks of every kind.

CALL YOUR YALE REPRESENTATIVE FOR A FREE WORKSAVER DEMONSTRATION

Get an eye-opening demonstration of rugged WORKSAVER performance. Be sure to ask about the famous WORKSAVER *Power Team*—Truck, Battery, Battery Charger. There's no obligation, of course.

MAIL THIS COUPON TODAY

The Yale & Towne Manufacturing Co., Dept. 44
Philadelphia 15, Pa.

I want to know how YALE WORKSAVERS can help me.

- ☐ Please have your local Representative call.
- ☐ Please send free copy of GEMS OF LOW COST MATERIALS HANDLING at once.

Company_____

Name_____ Title_____

Street_____

City_____ State_____

In Canada write: The Yale & Towne Mfg. Co., St. Catharines, Ont.

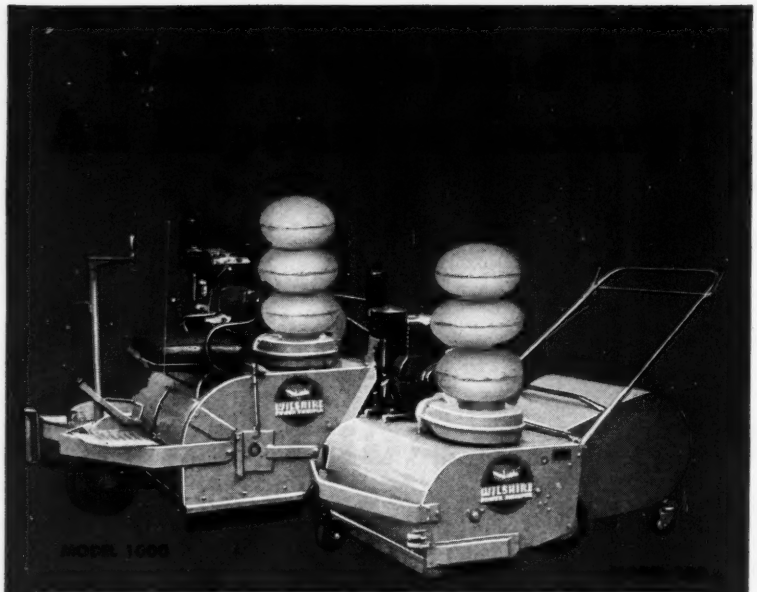
YALE & TOWNE

The Yale & Towne Manufacturing Co., Philadelphia 15, Pa.

YALE is a Registered Trade Mark of The Yale & Towne Manufacturing Co.

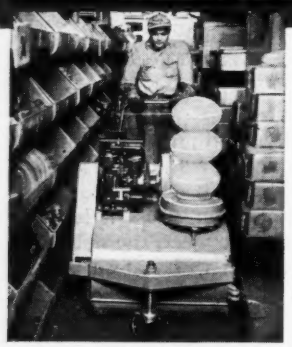
YALE GAS AND ELECTRIC TRUCKS • YALE HAND TRUCKS • YALE HAND AND ELECTRIC HOISTS

Circle No. 33 on Reader Service Card for more information



THERE'S A
WILSHIRE POWER SWEEPER
TO FIT *YOUR* NEEDS

IT CUTS YOUR SWEEPING COSTS 75%
(A Free Demonstration Proves It)



WILSHIRE sweeps inside, right up to walls, posts, down narrow aisles; faster and cleaner than a man with a broom.

WILSHIRE sweeps outside areas, too — parking spaces, plant yards, driveways, sidewalks, etc.

YOU SAVE ALL THESE WAYS WITH WILSHIRE POWER SWEEPERS

You save manpower for more productive work; that means you cut sweeping cost because 1 man with a WILSHIRE Power Sweeper sweeps as much area per hour as 5 to 10 or more men with brooms. WILSHIRE sweeps without dust; that eliminates sprinkling and sweeping compounds. WILSHIRE sweeps cleaner because the patented "Duscon" system sorts the dust from the debris.

A SIZE FOR EVERY PURPOSE

Five WILSHIRE Models for sweeping 27", 36" and 48" swaths. For all types of sweeping from light to heavy duty. Easy to operate; easy to maintain. A survey enables us to recommend the Model and Size best suited to your needs.

Write or wire for the name of your nearest WILSHIRE Dealer. He will give you a Free Demonstration in your own plant.

SWEEPING THE COUNTRY SINCE 1940

WILSHIRE
POWER SWEEPER
526 West Chevy Chase Drive
Glendale 4, California

IN CANADA — PLANT MAINTENANCE EQUIPMENT CO. — VANCOUVER & TORONTO

Circle No. 34 on Reader Service Card for more information

Kimberly-Clark Corporation invites you to investigate custom protection with Kimpak, whether you package furniture, flowers, appliances, pharmaceuticals, confections or electrical parts. It's available in rolls, sheets or pads.

Circle No. 71 on Reader Service Card

Get full information on Stanley Magic Doors from The Stanley Works, Magic Door Division. These door controls are helping to cut material handling costs, speed production and make important savings in heating and air-conditioning costs.

Circle No. 109 on Reader Service Card

Bulletin 710 gives you the facts on The Raymond Corporation's platform-type electric tiering truck. It has short length, offset drive wheel with 200 degree turning arc and features a knee-action swivel caster to compensate for uneven floors.

Circle No. 29 on Reader Service Card

The Rapids-Standard Company's illustrated catalog contains specifications on their Cold-Forged casters and information on their complete line of casters and hand trucks.

Circle No. 57 on Reader Service Card

You can get proof to show how Pittsburgh bulkheads will pay for themselves in savings of labor and materials in an average of 20 trips. It's available from Pittsburgh Steel Products Company.

Circle No. 3 on Reader Service Card

You can tow trucks or lift heavy weights with "Scotch" Brand Filament Tape, manufactured by Minnesota Mining & Manufacturing Company. More facts or free sample rolls are available.

Circle No. 78 on Reader Service Card

An illustrated brochure offered by Tracto-Lift Company describes their fork lift truck, which has over-size pneumatic tires, basic tractor transmission and ample underneath clearance to give greater traction on any ground in any weather.

Circle No. 93 on Reader Service Card

The solution to a number of material handling problems in your plant may

if it's a handling problem . . . consult MERCURY

With over 41 years experience in the designing, manufacturing and installation of material handling equipment, MERCURY is well qualified to advise you on your individual handling problems. As the *only* manufacturer of all four types of equipment *i.e.* fork trucks . . . . platform lift trucks . . . . tractors, both gas and electric . . . . and industrial trailers, you are assured of *sound* as well as *unbiased* counsel.

FORK TRUCKS

"Jeep" Model-230 (illustrated) fork truck of 2000 lbs. capacity at 24" load center. Right angle stacks in 8-foot aisle with 32" pallet. Automotive steering, foot pedal acceleration, 130" fork elevation, full "free" lift.

"Yak" fork truck, capacity 4000 lbs. at 24" load center, is available in stand-up, center or rear control or sit-down designs. "Yank" stand-up center control fork truck is rated at 6000 lbs. capacity up to 30" load center.

ALL MERCURY fork trucks feature *simple, single cylinder, low pressure* hydraulic lift with patented cross suspension.

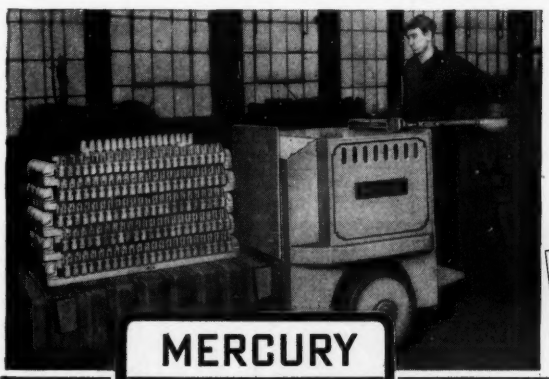
TRACTORS AND TRAILERS

"Tug" Electric Tractor (Illustrated): 3 models available – a 3 wheel light duty chassis and twin – 3 or 4 wheel medium or heavy duty chasses.

"Banty" Gas Tractor: A 3 wheel compact, short turning tractor which develops 2300 lbs. D.B.P.

Other MERCURY gas tractors are "Huskie," a heavy duty 4 wheel machine available with pneumatic or solid tires; and "Super-Huskie," a 6 wheel extra heavy duty pneumatic tired vehicle.

Trailers: Available in castor, 5th wheel steer or 4 wheel steer types. Capacities 2500 to 60,000 lbs.



PLATFORM LIFT TRUCKS

Illustrated is Model A-1020, wide design, 3 ton, low lift truck. Complete line includes narrow or wide models rated at 3000, 4000 or 6000 lbs. capacity with low, high or telescopic lift. Also, heavy duty, wide models rated at 10,000 lbs. with low or high lift.

MERCURY MANUFACTURING COMPANY
4154 So. Halsted St., Chicago 9, Illinois

☐ Have a representative call.

☐ Send copy of new 44 page catalog illustrating and describing complete MERCURY line.

Name_____

Company_____

Address_____

City_____ Zone__ State_____

MERCURY MANUFACTURING CO. 4154 S. Halsted St., Chicago 9, Ill.

Circle No. 35 on Reader Service Card for more information

16 OR 100 WAYS

TO HANDLE MATERIALS FASTER, CHEAPER WITH LORAIN

16 of the most common front end attachments for handling materials with a Lorain Crane are shown below. There are many, many more. But regardless of what you have to handle—in size, shape or type of material—a Lorain can do the job faster, better, at lower cost—operate in any kind of weather, day or night, regardless of ground conditions. One man at the controls of a Lorain replaces hard-to-get labor, moves quickly to wherever material has to be handled. A Lorain is truly a "one-man gang." Available on crawlers or rubber-tire mountings in capacities up to 45 tons. See your Thew-Lorain Distributor for uses and design features that will prove Lorains' superiority.

A 20-ton capacity Lorain Self-Propelled Crane, with 4 speeds in both directions up to 7 m.p.h. Other models available from 6 to 45 tons lifting capacities on crawlers or rubber-tires.

THE THEW SHOVEL CO.
Lorain, Ohio

✓ FOR BULK MATERIALS

CLAMSHELL	ORANGE PEEL	DRAGLINE	MAGNET
Crushed Stone Ashes · Cinders Sand · Coal · Slag Ore · Excavations	Scrap Ashes Cinders Excavations	Crushed Stone Ashes · Cinders Ore · Excavations Sand	Scrap · Pig Iron Turnings · Rails Pipe · Castings Punchings

✓ FOR HEAVY PIECES

HOOK BLOCKS WITH SINGLE SLING	HOOK BLOCKS WITH BRIDLE SLINGS	HAIRPIN HOOK	SPECIAL HOOKS
Machinery Stacks · Valves Rolled Steel Bar Steel	Rolled Steel · Rods Forms · Crates Boxes · Cases · Pipe Lumber · Billets	Heavy Pipe Castings Fittings Tanks	Boxes · Cases Kegs · Castings Machinery Barrels · Drums

✓ FOR LOOSE OR STACKED MATERIALS

TONGS	CLAMPS	GRABS	GRAPPLE
Railroad Ties Timber · Logs Poles · Bales Rail	Lumber · Ties Forms · Shapes Bar Steel Sheet Steel	Poles Railroad Ties Pulpwood Mine Timbers	Boxes · Crates Pipe · Pulpwood Barrels · Lumber Bundles

✓ FOR CONTAINERS OR WEIGHTS

CONCRETE BUCKETS	SKIPS	TOTE BOX	SKULL CRACKER
For handling concrete, pouring into forms, etc.	Ore · Cinders Foundry Sand Ashes Bulk Materials	For small finished or semi-finished parts	Breaking up scrap. Demolishing masonry

Circle No. 36 on Reader Service Card for more information

be solved with the Market Forge Company's hand lift truck, described in their informative catalog.

Circle No. 138 on Reader Service Card

Tops and bottoms of all sizes and shapes of boxes can be closed simultaneously on one machine manufactured by International Staple & Machine Company. Full details are available.

Circle No. 76 on Reader Service Card

You can get more information from Elizabeth Iron Works on their bridge ramps, available in capacities up to 15,000 pounds and deemed a necessary auxiliary to fork lift trucks.

Circle No. 131 on Reader Service Card

Coles Cranes Inc. are ready to engineer a faster, easier, more economical solution to your difficult material handling problems with their mobile cranes.

Circle No. 4 on Reader Service Card

Wright Hoist Division of American Chain & Cable Company, Inc., will send full information on their Speedway Frame "B" hoists. Features include alloy steel gears, self-lubricating ball and roller bearings, preformed improved plow steel cable, grooved drum, rigid metal weatherproof wire conduits and silver contact controls.

Circle No. 39 on Reader Service Card

Elwell-Parker industrial trucks are preventing production bottlenecks in more than 300 industries. Get a copy of the latest general catalog which describes all types of these trucks in detail.

Circle No. 5 on Reader Service Card

One man can easily unload, store and move 17 coils of steel with a 10-ton American MonoRail crane, and this crane furnishes efficient operation where low headroom is a critical problem. Let The American MonoRail Company tell you more about it.

Circle No. 18 on Reader Service Card

Bostitch offers literature to show which of its stapling machines, selected from more than 800 models, can help cut your shipping room costs.

Circle No. 77 on Reader Service Card

Mechanize Materials Handling

without costly installations or loss of productive time...

use an Allis-Chalmers HD-5G and Tracto-Shovel Attachments—

LIFT FORK ATTACHMENT
Stacking Height (under forks) - - 106 in.
Lifting Capacity 4,000 lb.
CRANE HOOK
Lifting Height (hook to ground) 138 in.
Lifting Capacity 5,000 lb.
40.26 drawbar hp.
1 cu. yd. bucket
Dumping height 9 ft., ¼ in.

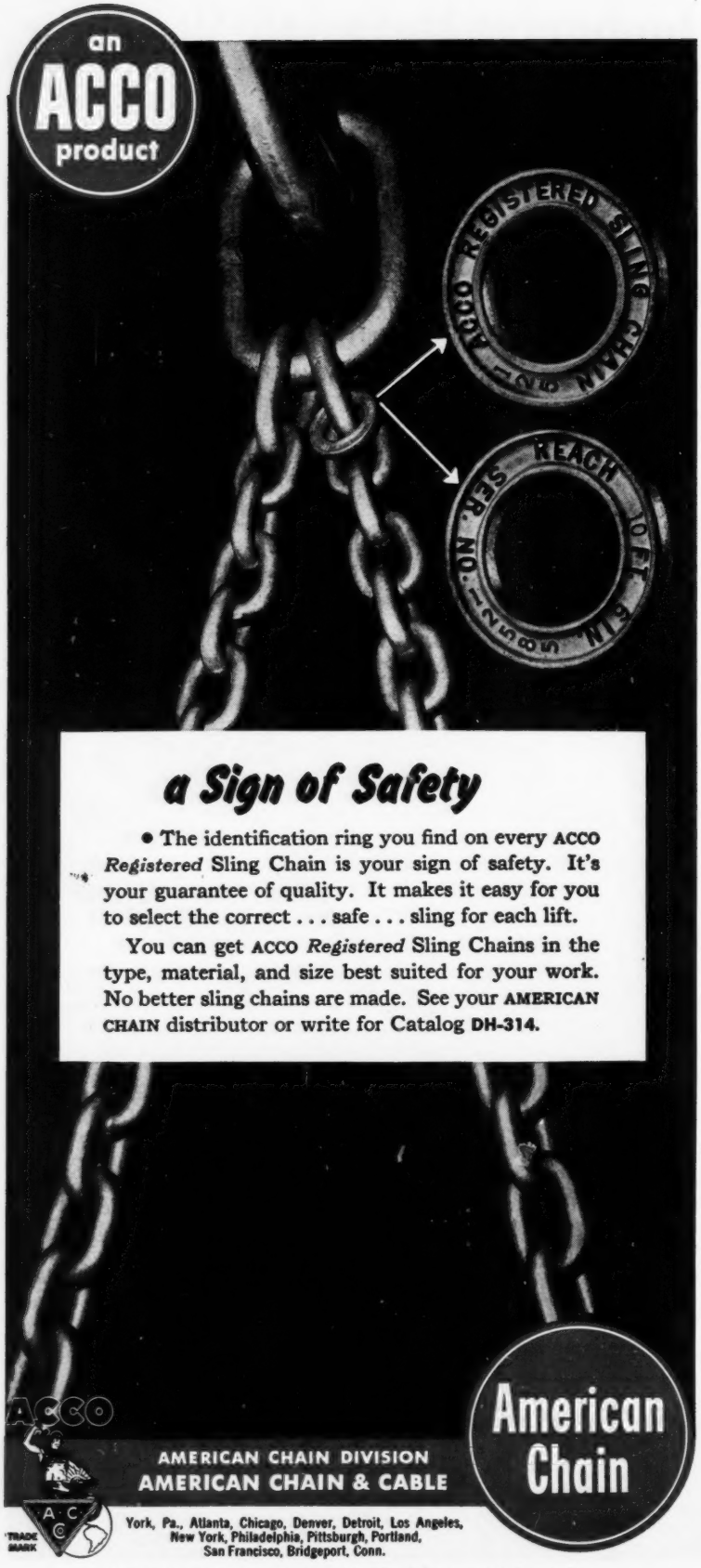
You speed materials handling "right now" when you put this fast-working tractor-shovel combination on the job. The HD-5G starts boosting production without waiting for costly installations or changes in plant layout. Digs into the toughest jobs, indoors or out... lifts, loads, excavates, pushes, tows... handles all materials, bulk, solid or packaged.

And it works easily in close quarters — turns in its tracks . . . has no bulky, overhead structure. Outdoors, the track-type tractor is not bothered by weather or ground conditions . . . works the year around, even in unpaved yards.

Choice of thirteen interchangeable Tracto-Shovel attachments makes the HD-5G a one-tractor material handling fleet. Special buckets, lift fork, crane hook, rock fork, 'dozer blades and others may be interchanged in a few minutes with simple tools.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Circle No. 37 on Reader Service Card for more information


an
ACCO
product
ACCO REGISTERED SLING CHAIN
REACH 10 FT. SLING SER. NO.
a Sign of Safety
• The identification ring you find on every ACCO Registered Sling Chain is your sign of safety. It's your guarantee of quality. It makes it easy for you to select the correct . . . safe . . . sling for each lift.
You can get ACCO Registered Sling Chains in the type, material, and size best suited for your work. No better sling chains are made. See your AMERICAN CHAIN distributor or write for Catalog DH-314.
AMERICAN CHAIN DIVISION
AMERICAN CHAIN & CABLE
York, Pa., Atlanta, Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Bridgeport, Conn.
TRADE MARK
American Chain
Circle No. 38 on Reader Service Card for more information

Regardless of what you have to handle —in size, shape or type of material— a Lorain crane can do the job faster, better and at lower cost. More information is available from The Thew Shovel Company.

Circle No. 36 on Reader Service Card

"Gems of Low Cost Materials Handling" from The Yale & Towne Manufacturing Company describes their industrial trucks of every kind. They are low in initial cost, economical in operation and simple for anyone to use.

Circle No. 33 on Reader Service Card

Tape-Strap, a gummed filament tape made by Mid-States Gummed Paper Company, has a tensile strength of 180 pounds per inch of width. You can get a free sample roll and complete data.

Circle No. 83 on Reader Service Card

You can provide easy mobility to a variety of industrial products with Ironbound all-purpose handling units. The manufacturer, Ironbound Box & Lumber Company, has more information available.

Circle No. 144 on Reader Service Card

Literature from The Cambridge Wire Cloth Company shows how their woven wire slings provide a greater bearing surface and load stability because of their broad flat body.

Circle No. 110 on Reader Service Card

The E. W. Buschman Company makes conveyors to move practically any part or product faster, easier and at lower cost. Catalog 60 describes roller conveyors, and Catalog 400 their complete conveyor line.

Circle No. 114 on Reader Service Card

Get more information on Baldwin-Lima-Hamilton Corporation's SR-4 measuring devices which can solve a wide variety of problems, including batch and crane weighing.

Circle No. 42 on Reader Service Card

Acme Steel strapping insures the safe arrival of your products in shipment.

Further details are available from Acme Steel Company.

Circle No. 17 on Reader Service Card

If you have a handling problem, let Mercury Manufacturing Company send you their 44-page catalog describing the complete Mercury line of fork trucks, platform lift trucks, tractors and industrial trailers.

Circle No. 35 on Reader Service Card

Additional information is available from The B. F. Goodrich Company on their tire and wheel analysis which points the way to savings for all material handling.

Circle No. 24 on Reader Service Card

Bulletin GEA-5630 from General Electric Company contains details on this company's electric-truck drives, said to give more work per battery charge and less power loss in resistor at reduced speed operation.

Circle No. 20 on Reader Service Card

"Care and Maintenance of Industrial Trucks" is a 16-page manual offered by Baker Industrial Truck Division of The Baker-Raulang Company.

Circle No. 50 on Reader Service Card

In Bassick's Floating-Hub wheels, the caster wheel is spring-controlled and floats in the frame to provide mechanical resiliency between the rim and axle. More complete details are included in Catalog 124A from The Bassick Company.

Circle No. 52 on Reader Service Card

A catalog from C & D Batteries, Inc., explains in detail the construction and performance features of their Slyver-Clad Batteries.

Circle No. 48 on Reader Service Card

The U.S. Royal demountable Innacush industrial tire can be changed in 10 minutes. Just unbolt the wheel, slip off the tire, replace with new tire and

Turn to page 141

Set Endurance Records

● Alloy steel gears, self-lubricating ball and roller bearings, preformed improved plow steel cable, grooved drum, rigid metal weatherproof wire conduits, silver contact controls . . . these are but a few of the features that mean long life and low maintenance of the finely balanced WRIGHT *Speedway* Frame "B" Hoists.

Call your distributor today for full information on the WRIGHT ***Speedway*** **FRAME "B"** . . . or write to us direct.

ACCO

WRIGHT HOIST DIVISION
AMERICAN CHAIN & CABLE

York, Pa., Chicago, Denver, Detroit, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

TRADE MARK

WRIGHT
Hoists
Trolleys
Cranes

Circle No. 39 on Reader Service Card for more information

Now Available...

the New 3500 lb.

MOBILIFT

Lev-R-Matic DRIVE

FORK LIFT TRUCK

Created to meet a demand! . . . This is the stand-up Model "H-W" that MOBILIFT engineers developed to meet specific needs in all types of industry to help speed production, cut handling costs.

Not a single maneuverability feature of the smaller models has been sacrificed . . . not a single famous feature of MOBILIFT'S lighter trucks has been eliminated.

You now have MOBILIFT'S complete versatility with a compact **3,000** lb. Model "H" and a **3,500** lb. Model "H-W" in this new series.

MODEL	H Stand-up		H-W Stand-up	
Capacity (lbs.)	3,000 lbs.		3,500 lbs.	
Load Center	15"		15"	
Lift Height	68"	108"	68"	108"
Mast Height	63"	83"	63"	83"
Mast Height (Extended)	96"	136"	96"	136"
Free Lift	36"	56"	36"	56"
Turning Radius (Outside)	61¾"		63⅞"	
Turning Radius (Inside)	Zero		Zero	
Turns in Inter. Aisles	60"		62"	
Speed of Travel	Up to 6 MPH		Up to 6 MPH	
Speed of Lift (Loaded)	50 FPM		50 FPM	

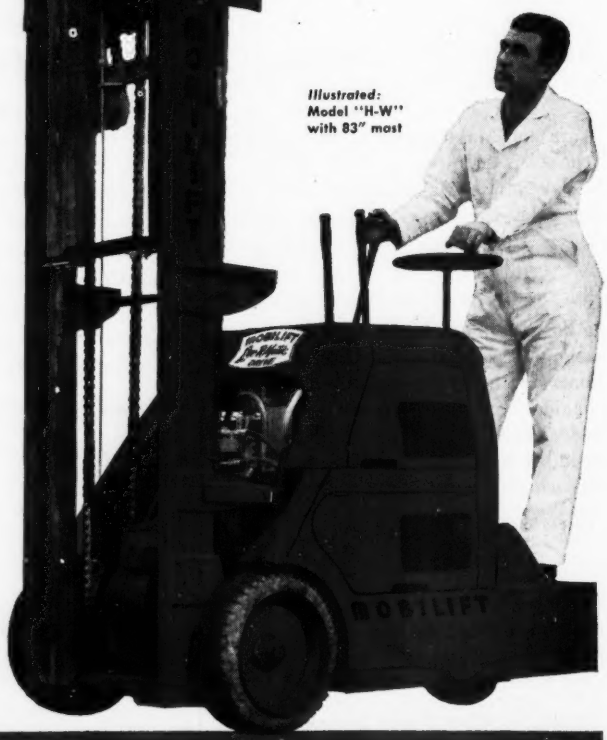
WRITE TODAY **for complete specifications on MOBILIFT Lev-R-Matic Drive Fork Lift Trucks . . . No obligation, of course.**

CHECK THESE EXCLUSIVE FEATURES

✓ **LEV-R-MATIC CONTROLS**
Grouped 2-way Push-Pull levers perform all jobs—Forward-Back, Elevating and Tilting. NO GEARS TO SHIFT.

✓ **MOBIL-CHAIN LIFT**
Roller chain operated, full visibility uprights allow unobstructed forward view. The roller chain lifts smoothly at 50 F.P.M.

✓ **MOBILIFT AIR COOLED 3-CYLINDER ENGINE**
This heavy duty engine was designed and manufactured for exclusive use in MOBILIFT Fork Lift Trucks. It operates economically with minimum repair and service.



Illustrated: Model "H-W" with 83" mast

MOBILIFT Lev-R-Matic DRIVE

MOBILIFT CORPORATION

835 S. E. MAIN ST., PORTLAND 14, OREGON

2317 W. 18th, Chicago • 790 Patterson Ave., E. Rutherford, N. J. • 2734 Taylor St., Dallas

1113 Spring St. N.W., Atlanta • 2730 San Pablo Ave., Berkeley

Circle No. 40 on Reader Service Card for more information

No need to wait for your "Factory of the Future"

THE CHANGEOVER TO NESTIER

— the modern system for materials handling —

CAN BE MADE IN YOUR PLANT TODAY!

Now, at last, scientific design has been applied to the "tote box." With the NesTier, we offer a new system—a new technique—that works wonders in speeding up the flow of work on any production line.

From stock room to loading dock, the NesTier System, including racks, hand trucks, dollies and conveyor hangers, is designed for your plant. And the NesTier is designed to work with your present equipment—lift or fork trucks, overhead or roller conveyors and pallets.

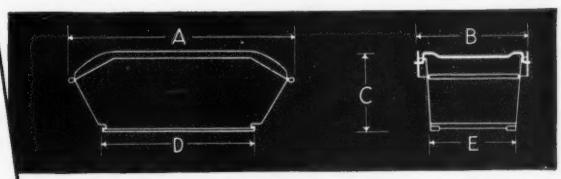
In less than nine months, the NesTier has replaced antiquated equipment in many plants, both large and small, including: General Electric Co., U.S. Army, U.S. Navy, Douglas Aircraft, International Harvester, Westinghouse Electric, The Formica Co., Fusite Corp., Chrysler Corp., International Business Machines Corp., and The Hallicrafters Co.

IT NESTS

NesTiers nest when empty to save space. Bails prevent complete telescoping, eliminate possibility of units jamming or sticking together.

IT TIERS

Bails lock units together to form a rigid stack. Parts in all units are visible and accessible from either end.



SPECIFICATIONS

Nestier	gauge	weight	bails	A	B	C	D	E
No. 175	18 ga.	6 lbs.	¼" dia.	18 1/16"	9 1/16"	6 3/16"	11 3/4"	7"
No. 220	16 ga.	15 lbs.	5/16" dia.	22 5/16"	12 1/2"	7 3/4"	14 1/16"	8 1/2"

IF YOU HANDLE SMALL PARTS, SEND FOR THIS FREE BROCHURE

This interesting brochure, which fully explains the Nestier System, how it cuts costs and speeds up production, will be sent free on request. Please ask for Form 42.

NESTIER®

THE CHAS. WM. DOEPKE MANUFACTURING CO., INC.

Metal Specialties Division

ROSSMOYNE, OHIO, U.S.A.

Circle No. 41 on Reader Service Card for more information

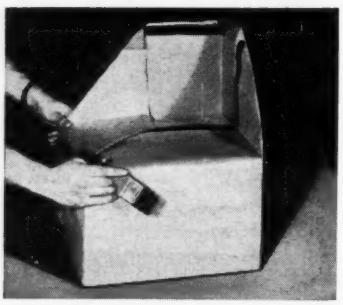
What's NEW in equipment

For more information on these products, use the postcard bound into this issue.

Multi-Purpose Cart—*Palmer-Shile Co.*

Design and balance of this cart manufactured by Palmer-Shile Co., is said to insure easy wheeling and convenient dumping of scrap, small parts, liquids, ashes, mixed concrete, fertilizer and other materials. All welded construction permits it to handle heavy loads. Measurements: Inside of body—45 in. long at top, 32 in. at bottom, 24 in. wide and 17 in. deep. Handles extend 34 in. from body. Is 79 in. long, 30 in. high and 30 in. wide.

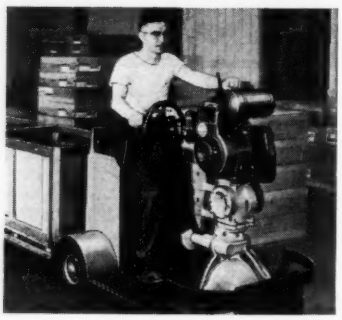
Circle No. 148 on Reader Service Card for more information



Water Resistant Case Liner Glue—*Paisley Products Inc.*

An adhesive which passes the eight-hour water resistant test as described in paragraph F-4b(1) of JAN-P-140 has been developed by Paisley Products Inc. It is for use on paper manufactured in accordance with JAN-P-125. Identified as Paisley water resistant case liner glue #4391, it is a ready for use product which is tacky to the touch. It reportedly has a long range allowing the operator sufficient time for combining paper.

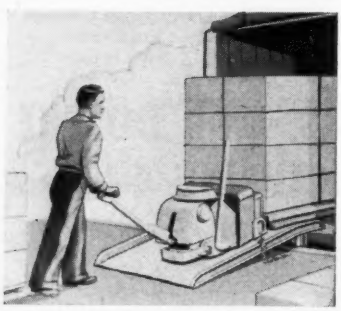
Circle No. 149 on Reader Service Card for more information



Powerful Industrial Tractor—*Truck-Man Div.*

A tractor model capable of hauling cargo trains up to thirteen times its own weight has been added to the line of industrial trucks manufactured by Truck-Man Division of the Knickerbocker Co. The 5.8 h.p. engine is said to operate a full eight hour shift on about one gallon of gasoline. Power turret revolves 360° for added maneuverability. Weight of the tractor is 990 lb. Other features: low cost, heavy duty industrial pneumatic tires.

Circle No. 150 on Reader Service Card for more information



Easily Handled Steel Bridge Plate—*Penco Engineering Co.*

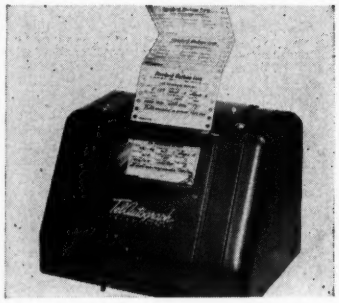
Simplified engineering design is said to make the Penco Steel Truck Loading Ramp easy to place in position, and to remove and transport by one-man operation. The bridge plate accommodates trucks that are either higher or lower than the dock level with a simplified designed "ramp stop" that holds plate securely in position. It is of all-welded construction and is made of heavy-duty steel safety tread plate crowned to compensate for height differences.

Circle No. 151 on Reader Service Card for more information

Heavy Duty Fork Truck—*Tracto Lift Co.*

A machine that combines "go-anywhere" qualities of a tractor with lifting power of a fork truck has been developed by Tracto Lift Co. It can operate on rough or sandy ground, according to the manufacturer. Is said to provide a speedy and efficient method of storing concrete products, construction and building material. Available with lifting capacities of 3,000, 4,000, 5,000 or 6,000 lb. Fork lengths from 30 to 60 in. Lifting heights up to 12'6".

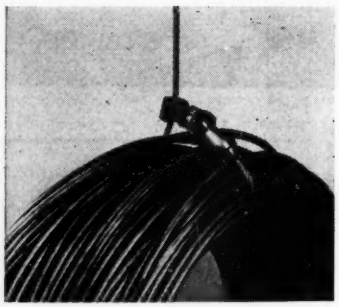
Circle No. 152 on Reader Service Card for more information



Recording Communications Instrument—*TelAutograph Corp.*

The TelAutograph Instan-Form telescriber is said to combine business forms with the principles of telescriber (handwritten) communication. Business forms filled in on a transmitting telescriber are reproduced immediately (on a similar form) at one or many remotely located telescribers. Suggested uses are for control of quality and production, for requisitioning, inventory control, warehousing, and shipping. Written records for file are reproduced immediately.

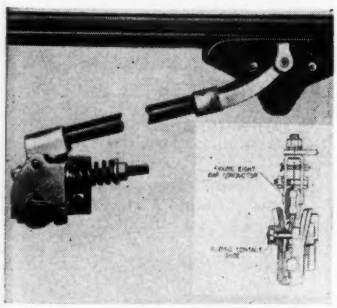
Circle No. 153 on Reader Service Card for more information



Choker Sling Fitting—*Electroline Co.*

A choker sling fitting perfected by Electroline Co. is said to increase safety and rope life. It employs two overlapping and co-acting hooks which are easily applied to a wire rope to form a loop of any desired size. Rope cannot be freed from the sling until both hooks are disengaged manually, thus preventing accidental release. Hooks are joined to the fitting portion of the choker sling fitting by a pivot which allows the unit to conform automatically to the size of the load.

Circle No. 154 on Reader Service Card for more information



Mobile Electrification System—*Benbow Mfg. Co.*

The Insul-8 Bar mobile electrification system for supplying power to bridge cranes, monorail hoists, and conveyors, is said to be quick to install and easily adaptable to many systems now in use. It consists of two units: a sheath of insulation material that shapes over the 8-bar conductor; and a sliding shoe collector held against the insulated conductor by spring action. Contact is through a continuous, narrow opening at bottom of the insulation sheath.

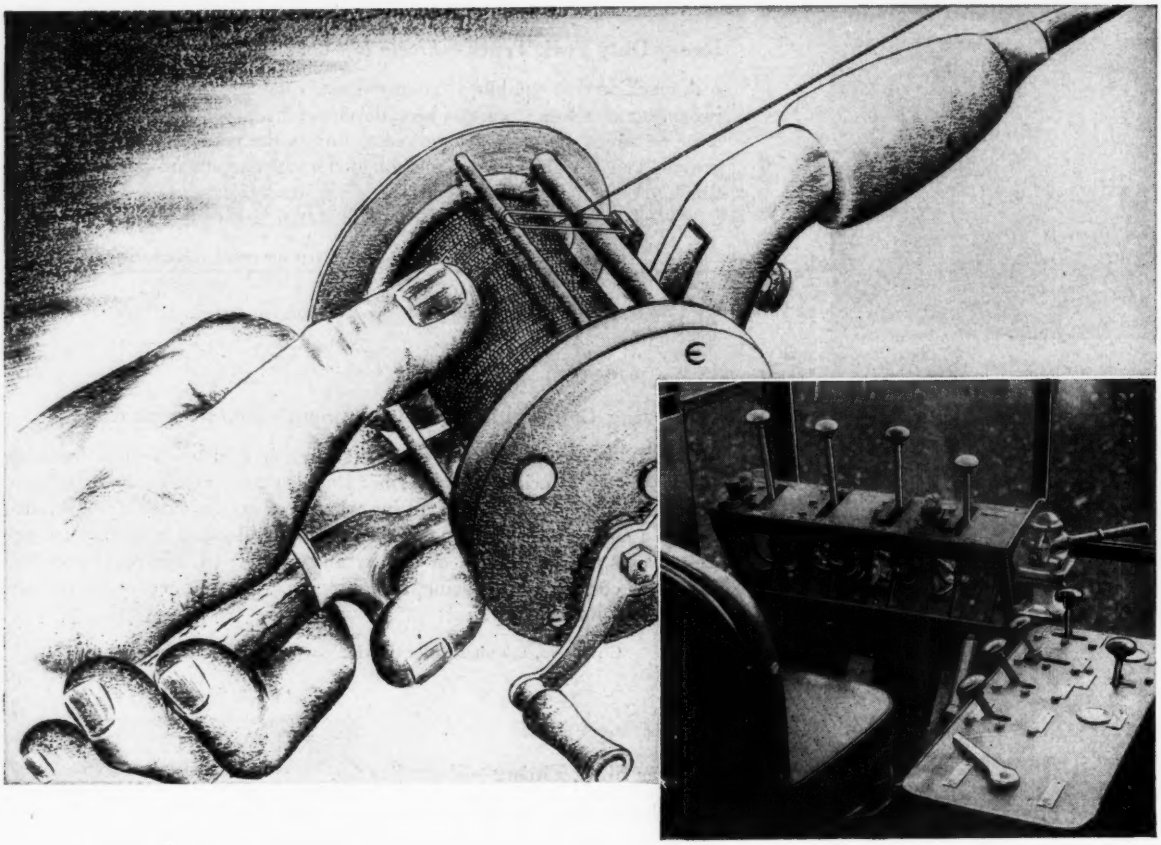
Circle No. 155 on Reader Service Card for more information

Efficient Drum Storage Rack—*Equipment Mfg. Inc.*

Manufacturers, distributors and warehousers of paints, oils, chemicals and other materials stored in drums will be interested in the drum storage rack designed by Equipment Mfg., Inc., Principal advantages claimed by the manufacturer are: drums may be stacked right up to the ceiling; selection of any drum can be made without shifting or disturbing others; faucets may be inserted for drawing off small quantities. Design permits easy re-arrangement for changing warehouse conditions.

Circle No. 156 on Reader Service Card for more information

More New Products Begin On Page 121



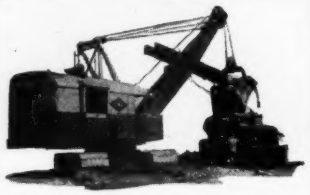
Complete Command of Operations . . .

Right under your thumb

With LIMA precision air controlled clutches and brakes you get the same smooth, easy, responsive control of the hoist and drag lines that you do when you apply the under-the-thumb tension to the line on a fisherman's reel.

There are other advantages, too. LIMA precision air control promotes long life of the machine and uniformity to the operating cycle. It also automatically compensates the adjustments of the clutches for wear of lining and to meet weather and operating conditions.

Last (but by no means least), there's no mid-afternoon slowdown because of operator fatigue. Both man and machine can work at peak level for the entire shift.



LIMA SHOVELS are available in capacities from ¾ to 6 yards.

LIMA CRANES are available in sizes to 110 tons capacity.

LIMA DRAGLINES are available in variable capacities to suit specific needs.

Wheel or truck mounting is available on machines of ¾ and 1½ yards capacity.

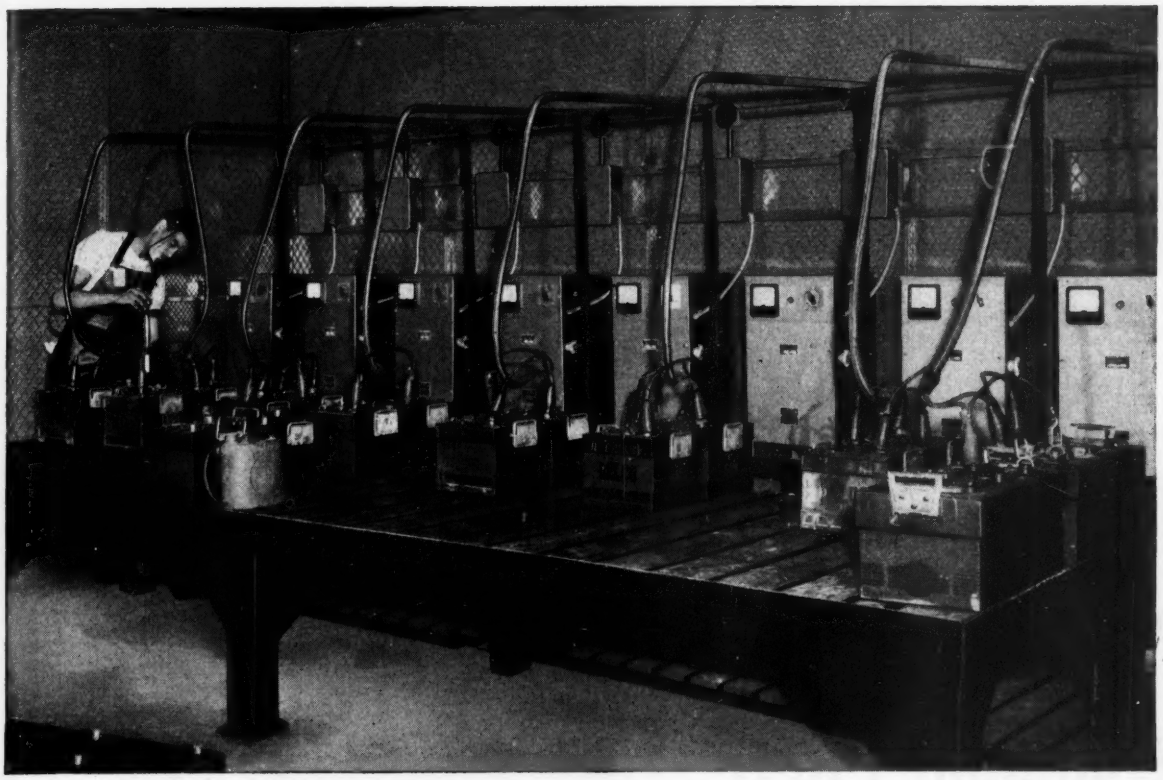
BALDWIN-LIMA-HAMILTON CORPORATION
LIMA-HAMILTON DIVISION
LIMA, OHIO

OFFICES IN PRINCIPAL CITIES OF THE WORLD

BALDWIN-LIMA-HAMILTON

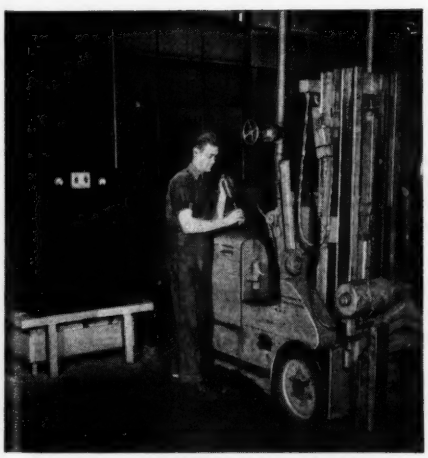
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS • TRUCK CRANES

Circle No. 42 on Reader Service Card for more information



FLEXIBILITY AND LOW COST are two reasons eight G-E metallic rectifier chargers, above, are used in a government installation. They have been moved several times to fit changing production layouts, and are operated singly or in groups depending on number of batteries to be charged. In operation for more than 10 years, they have needed negligible maintenance and are now on duty 24 hours a day.

Get more working time from your trucks with G-E Metallic Rectifier Chargers



"ON-THE-SPOT" CHARGING is easy with G-E metallic rectifier chargers because they can be placed right in truck working areas.

It's faster and easier to keep industrial trucks operating at top efficiency—get more *working* time—when you use G-E metallic rectifier battery chargers.

EASY TO INSTALL. No special foundation is needed. G-E chargers occupy small space, can be placed in convenient locations—even in truck working areas for "on-the-spot" charging.

EASY TO OPERATE. Fully automatic, G-E chargers can be used by inexperienced operators. The user merely plugs in the charger, connects the battery and sets the time switch. Safety features prevent damage to battery or charger in case of power failure.

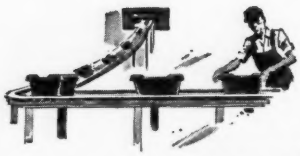
NO MAINTENANCE. Other than an occasional dusting, and an annual oiling of the cooling fan in some types—G-E metallic rectifier chargers will operate for many, many years with no maintenance.

These and many other features make G-E metallic rectifier chargers a timely, low-cost investment for faster, easier materials handling. For information write for Bulletin GEA-5292A, *Section 463-6, General Electric Co., Schenectady 5, New York.*

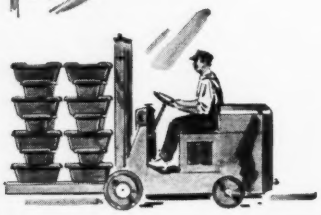
GENERAL ELECTRIC

463-6

Circle No. 43 on Reader Service Card for more information



BY CONVEYOR...



BY LIFT TRUCK...

BY GEORGE...

You can cut Handling Costs with U. S. Royalite Tote Boxes!

From initial lower cost to longer, more efficient service, tote boxes made of tough U. S. Royalite are your best buy in the long run.

Durable U. S. Royalite is highly resistant to impact . . . color-permeated throughout for easy departmental segregation. The unique, seamless design of Royalite tote boxes makes them adaptable to most mechanical conveying systems. Lightweight with hand grips on all four sides, they can be handled easily and efficiently . . . stacked or nested to save space.

Replace worn-out, dented and chipped tote boxes with U. S. Royalite tote boxes. They're made to last indefinitely. Available *now* in any size . . . engineered to speed up small parts handling and cut handling costs!

CHECK LIST OF ADVANTAGES OF U. S. ROYALITE TOTE BOXES

- ✓ Available immediately in any size
- ✓ Tough—will last indefinitely
- ✓ Lightweight
- ✓ Highly resistant to impact, non-splintering
- ✓ Not affected by oils, alkalies, most acids
- ✓ Color-permeated throughout for easy departmental segregation
- ✓ Will stack or nest
- ✓ Adaptable to any type conveying system
- ✓ Non-warping, non-corrosive
- ✓ Waterproof, stainproof, non-magnetic

U.S. ROYALITE®
TOUGH PLASTIC PRODUCTS

UNITED STATES RUBBER COMPANY
2638 North Pulaski Road, Chicago 39, Illinois

Circle No. 44 on Reader Service Card for more information

BUDA "FT" SERIES Fork Lift Trucks

Get the OK from all three!

MANAGEMENT

"Diesel powered Budas have cut fuel costs 50 to 60%, and maintenance is negligible. Under hard use, these new Budas are giving better service than anything we've seen."

MAINTENANCE MEN

"Simplest trucks to service and maintain. Everything—engine, battery, fuel, electrical and hydraulic system—is easy to get at. Making the counterweights and panels removable leaves the whole truck wide open . . . makes maintenance faster, easier."

OPERATORS

"These new Budas are a breeze. I can handle more loads now than ever before. Easier to operate, too. Controls and instruments are placed just right. The guys who built this truck must have been operators."

14 STANDARD MODELS...Capacities to 7500 lbs.

BUDA DIESEL or GASOLINE POWER

See the new FT Series Fork Trucks at your nearby Buda Distributor. Spend ten minutes looking them over . . . watching them operate and you'll agree that these new trucks were produced by men who know fork truck design and construction. Streamlined, powerful, rugged, the new Budas are way ahead in every way. See them today and get complete details. Write for Bulletin 1570. There is no obligation. *The Buda Company, Harvey, Ill.*

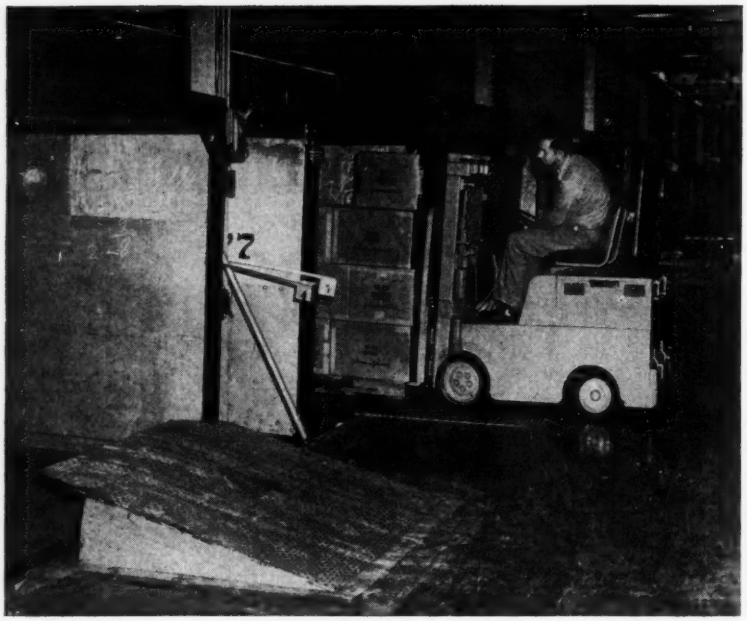
BH-39

BUDA

The Line with All 3 for Diversified Handling

Manufacturers of Material Handling Equipment, Lifting Jacks, Maintenance of Way Products, Earth Drills and Diesel and Gasoline Engines

Circle No. 45 on Reader Service Card for more information

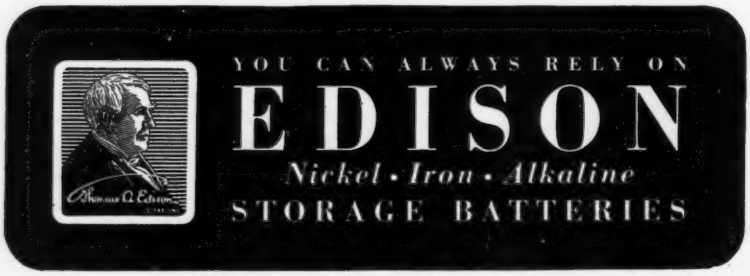


Do It Electrically

Electric power, produced wholesale in a central station, is the lowest-cost power you can buy. EDISON Nickel-Iron-Alkaline Storage Batteries make it available to material-handling trucks with these important additional advantages: high-torque electric-motor drives . . . power instantly on and off for maximum efficiency in the inherently stop-and-go operation of material-handling trucks . . . quiet operation . . . no inflammable fuel . . . no odors or exhaust fumes . . . maximum availability.

EDISON Nickel-Iron-Alkaline Storage Batteries employ steel cell construction, an electrolyte which is a recognized preservative of steel and a foolproof electrochemical principle of operation. They are unequaled for durability, dependability, long life and operating economy. In combination with electric-motor drives, they insure the closest approach to failure-free truck operation known. They are available in steel cradles and demountable steel boxes for ease in exchanging at convenient intervals for multiple-shift truck operation.

Because EDISON batteries are so widely known for high quality, many people think they are higher priced than they really are. Get prices on the capacities required by your trucks. By comparing this factor with their well-known long life, you will see why they are first choice of cost-conscious users. Send for free copy of our bulletin *Modern Material Handling;* describes the unit-load method of handling, the power requirements of material-handling trucks, and the characteristics of EDISON batteries; 28 pages; 8½x11; profusely illustrated. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. Thomas A. Edison of Canada, Limited, Montreal.



Circle No. 46 on Reader Service Card for more information

Highlights Of The Month's News . . .

Every month, we get many, many letters from readers asking us for tear sheets or reprints of articles that have appeared in FLOW. Just for the record, we are more than happy to send these along to anyone who is interested. Normally, there is no charge for this service — except when some very large order is received. And if you have a problem and want tear sheets of past articles covering this subject, we're more than happy to dig through our back issues and send these along too.

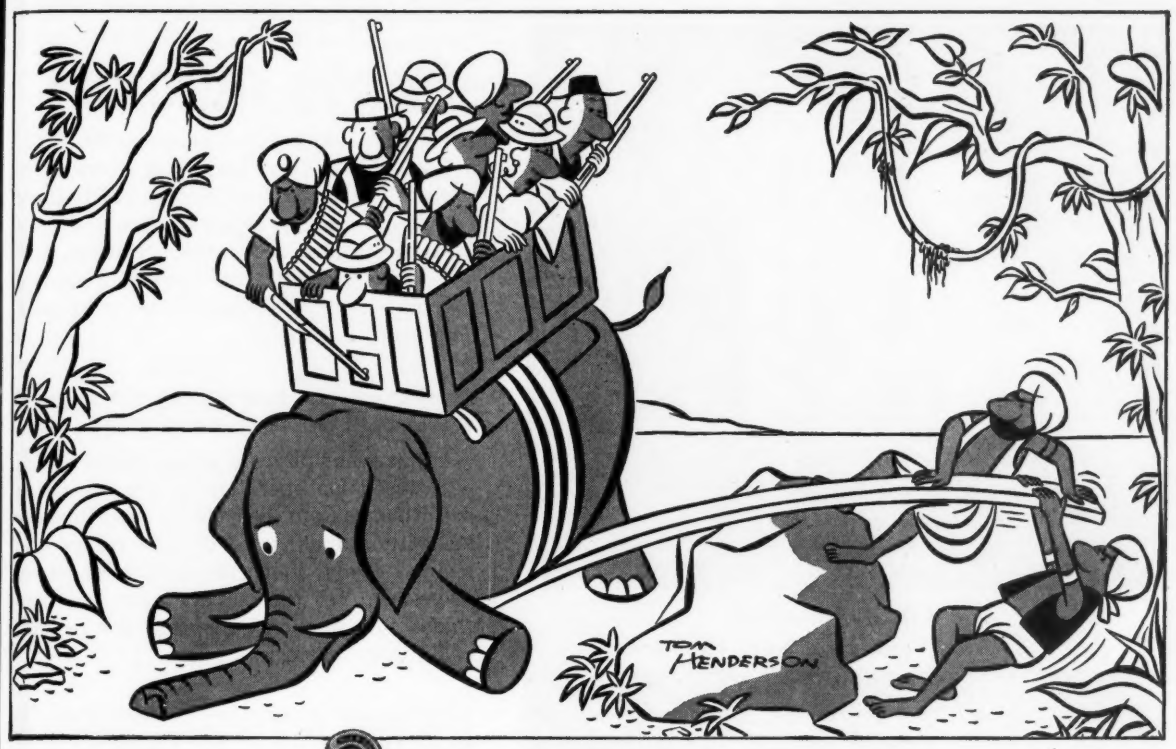
A "Safety Code For Industrial Power Trucks" has been issued by The American Society of Mechanical Engineers. The 30-page booklet covers such topics as definitions, construction and design features, general safety regulations, specific safety rules and regulations, and includes many line drawings of different types of trucks. You can get a copy from the Society at 29 West 39th St., New York 18. The price, 85 cents.

"Production Control" is the title of a new book by Paul D. O'Donnell, Assistant Professor Of Industrial Management, Boston College. This work covers the fields of production forecasting, product development, plant layout, material handling, control of materials, routing, scheduling, etc. The 320-page book, which sells for $6.25 is available from Prentice-Hall Inc., 70 Fifth Ave., New York City 11.

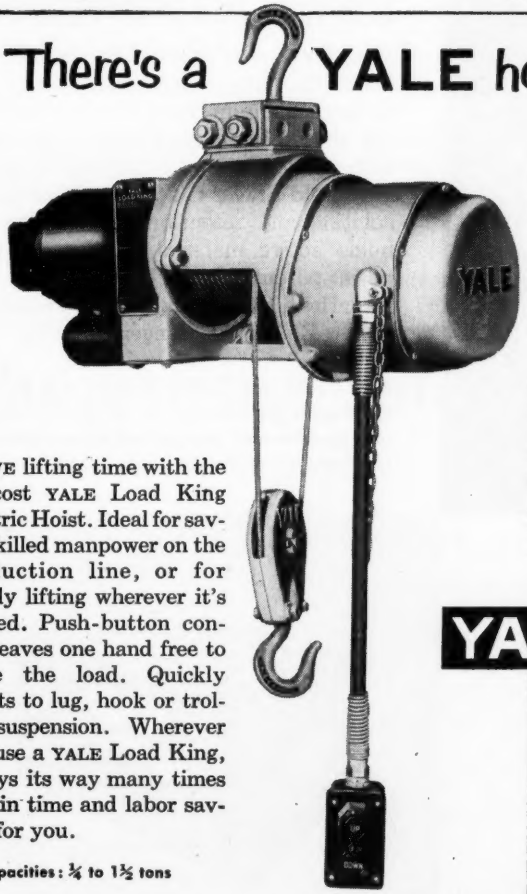
In our trips around the country, we have asked a lot of plant operating personnel about the problems they are having with relation to material handling. From their answers we have compiled a rather imposing list from which we will plan many of our future stories. Naturally we cannot contact anywhere near all our readers in person, so we hope that any of you who would like us to research and publish data on specific operations would contact us. Maybe you are having trouble with your receiving; perhaps it's hand handling at work stations; as several people told us, handling in storerooms is a real problem. No matter what it is, we'd like to hear from you.

Incidently, we'd like to give credit

(Turn to page 148)



There's a YALE hoist for *every* lifting job!



• SAVE lifting time with the low-cost YALE Load King Electric Hoist. Ideal for saving skilled manpower on the production line, or for speedy lifting wherever it's needed. Push-button control leaves one hand free to guide the load. Quickly adapts to lug, hook or trolley suspension. Wherever you use a YALE Load King, it pays its way many times over in time and labor savings for you.

Capacities: ¼ to 1½ tons

Yes, YALE has the *right* hoist for all of *your* lifting jobs. YALE Hoists of every kind, with capacities from 500 lbs. to 40 tons, are engineered to save you *most* in effort, speed and cost on every lifting job.

And your YALE Distributor has years of experience in solving lifting problems... He can draw on the world's finest and most complete line of hand and electric hoists to meet your special lifting needs. Look for your local YALE Distributor in the Classified Directory. Or mail the coupon below.

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I'm interested in lifting for less with a YALE Hoist.

☐ Please have your local Distributor call on me
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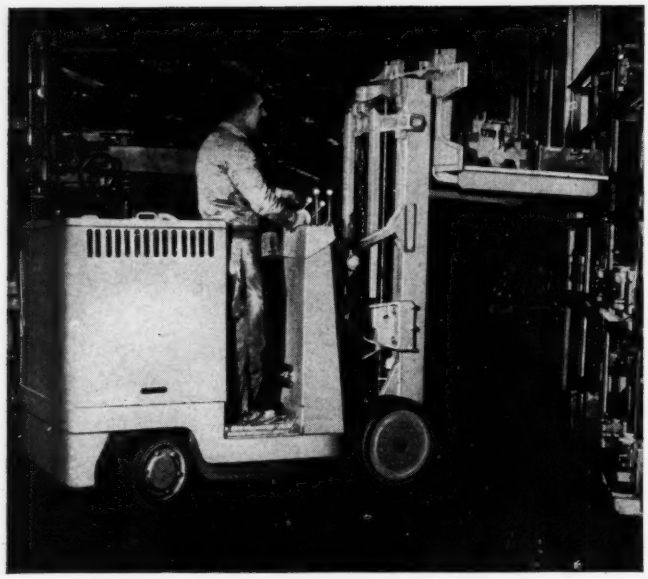
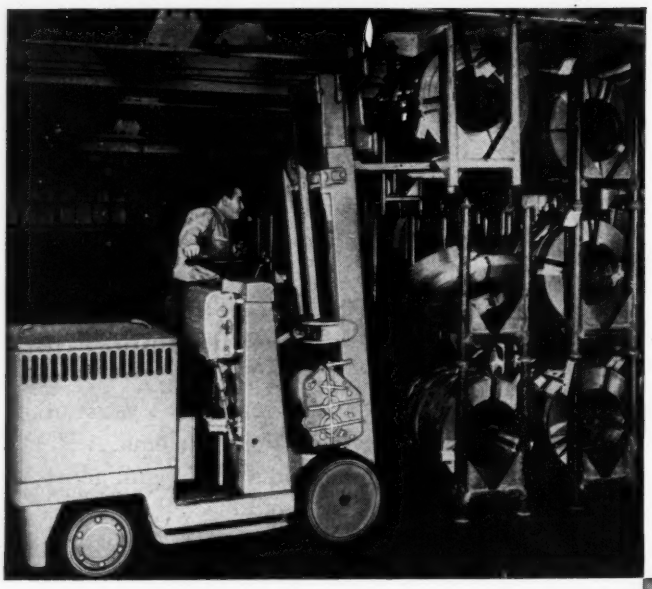


C&D Slyver-Clad
...the *best* battery for *your* lift trucks



STARTS STRONG!

Right from the very first minute of the shift, a C&D Slyver-Clad battery delivers extra power. That's because *this* is the battery with 20% greater capacity than ordinary batteries. Plates are heavier, thicker, and 14% longer! Result: more power-producing material to help your trucks get *more work done each day!*

WORKS STRONGER!

The extra-long plates in a C&D Slyver-Clad battery enable operators to get *maximum* performance from their trucks—to lift heavy loads time and again, to take ramps and inclines easily, to travel swiftly whenever necessary. Yet this super battery is contained in a steel-tray the same size as that of ordinary batteries!

ENDS STRONGEST!

With Slyver-Clad power there's no let-down before the end of the shift. Longer plates deliver maximum power for a *full*, hard working day. Secret of getting more battery into a given space lies in C&D's exclusive Five-Fold Slyver-Clad method of plate insulation and retention. Efficient retention holds active material in place so its full power-potential can be utilized. During its entire life this same principle accounts for Slyver-Clad's 35% longer work-life!

FREE—Send for C&D's catalog on Slyver-Clad Batteries which explains in detail the construction and performance features of these hard-working batteries. Write for your copy today!

C&D

BATTERIES, INC.
OF CONSHOHOCKEN, PA.
(In the Philadelphia Area)

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Boston, New York, Philadelphia, Syracuse, Buffalo, Pittsburgh, Washington, Atlanta, Jacksonville, New Orleans, Cleveland, Detroit, Chicago, St. Louis, Minneapolis, Dallas, Denver, San Francisco, Los Angeles, Portland, Seattle

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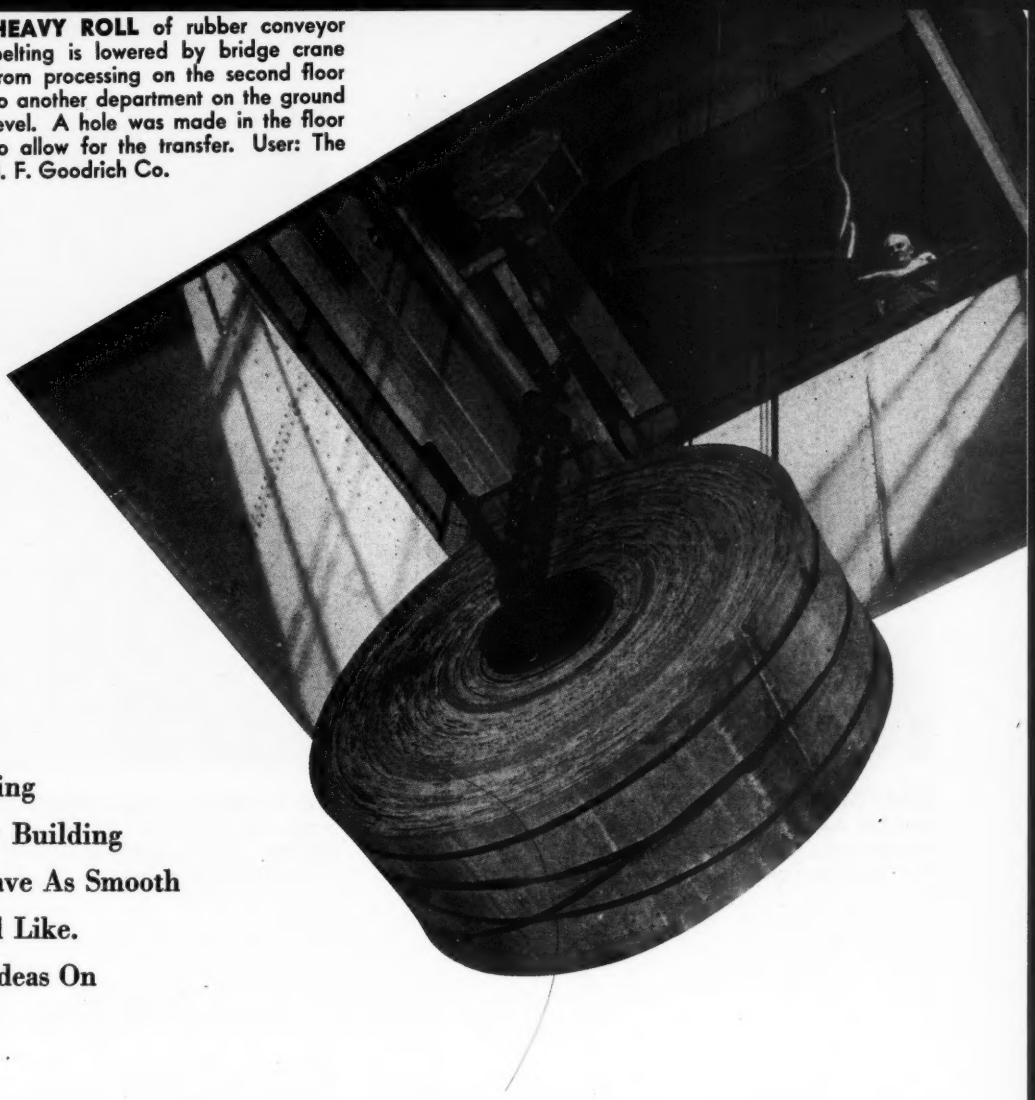


HEAVY ROLL of rubber conveyor belting is lowered by bridge crane from processing on the second floor to another department on the ground level. A hole was made in the floor to allow for the transfer. User: The B. F. Goodrich Co.

If You're Operating
In A Multi-Story Building
You May Not Have As Smooth
A Flow As You'd Like.
Here Are Some Ideas On

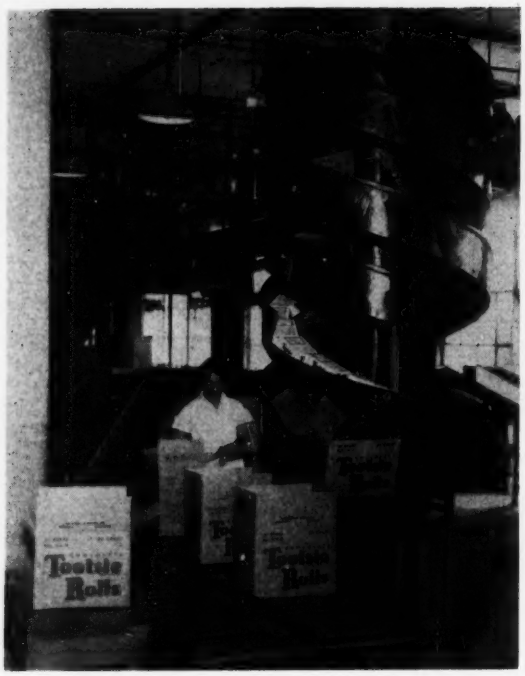
Improving Inter-Floor Handling

A good percentage of the letters we receive each month ask for tear sheets of FLOW articles on handling goods between floors. As one man put it recently, "I'd love to operate in a sprawling one-story building where all moves would be on one level. However, I'm faced with the problem of moving goods between floors in a multi-story structure. Can you give me any suggestions on equipment to make my job easier?"

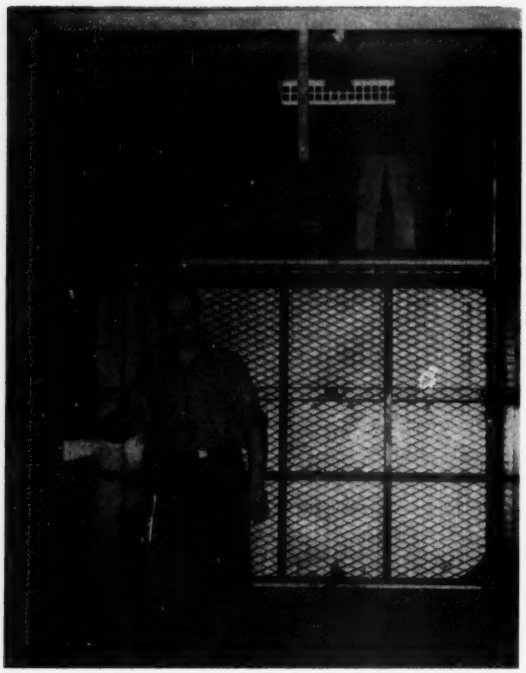
Well, Mr. FLOW Reader, and all you others who have written, on the following four pages are photos of various types of equipment which are doing a job of inter-floor handling for other plants. Perhaps, they can help you with your own operations.

However, regardless of the equipment you decide upon, there is one important fact to remember. Plan the material flow so that it ends adjacent to the inter-floor carrier, then picks up again at an adjacent point on the delivery level. Sometimes it is possible to use horizontal handling equipment for inter-floor moves as well. There are examples shown in this survey.

Thus, the secret of success is to combine inter-floor handling equipment with the normal horizontal flow so that transfers between floors can be accomplished as smoothly as possible.

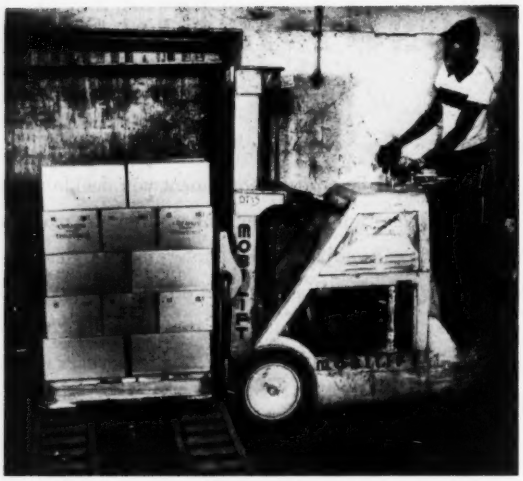


CARTONED GOODS and other products with smooth surfaces are often transferred between floors in spiral metal chutes. Often, rollers form chute carrying surface for smoother flow, protection of goods.



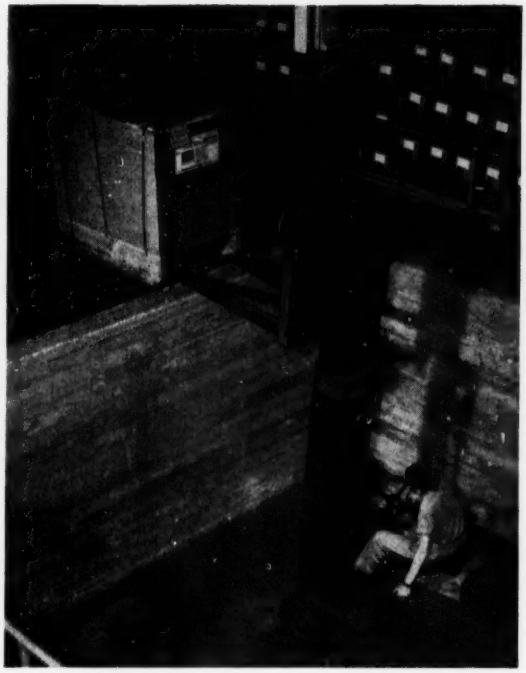
TO CONNECT ADJOINING BUILDINGS an elevator can sometimes do the job. As shown here, this elevator has an entrance at both ends, feeds goods between different levels of two buildings.

You Can Improve Your Inter

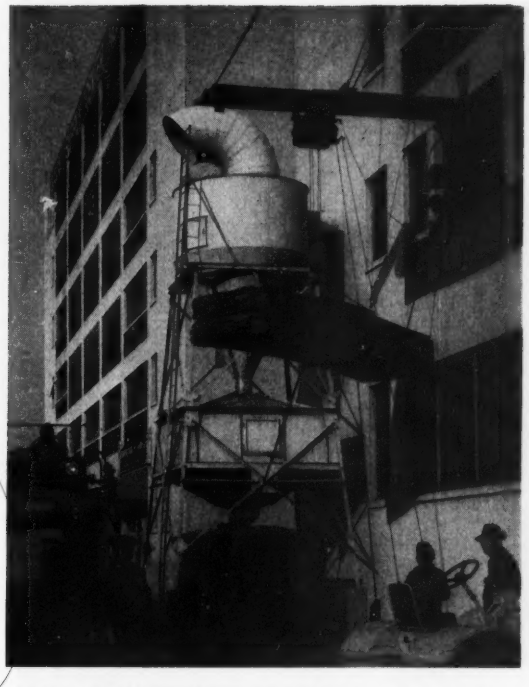


TO SAVE WAITING TIME, the Otis Terminal Warehouse, Cleveland, places roller conveyors on elevator floor and adjacent warehouse floor. Loads are left by fork truck, pushed onto elevator later.

FOR CONTINUOUS FLOW between floors, a belt conveyor, like this one, is often used. Operator loads outbound boxes on belt in basement; they're delivered directly to shipping on first floor.

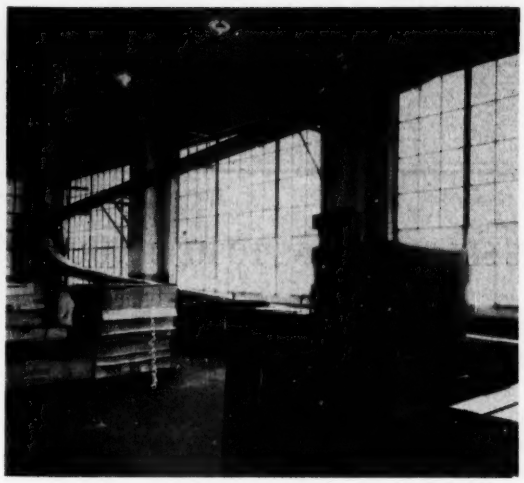


WHEN LEVELS are a moderate distance apart, a fork truck or other high-lift vehicles can be used. In this case, a fork truck deposits a skidded load on the ground floor from a truck well. Another truck will pick up load.

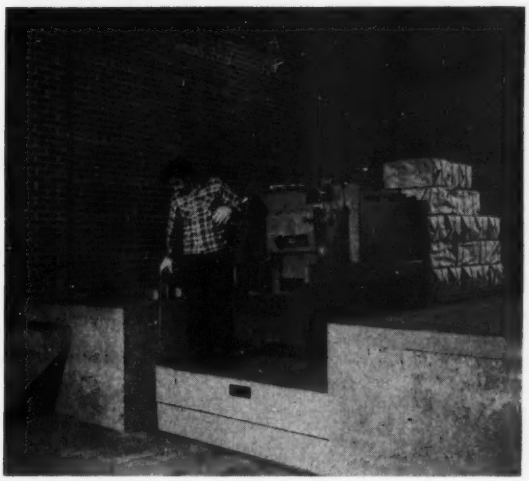


HANDLING BETWEEN FLOORS outside a building can be accomplished with a hoist operating on a monorail spur to connect upper floor departments with the ground. User: Naval Supply Center, Norfolk, Va.

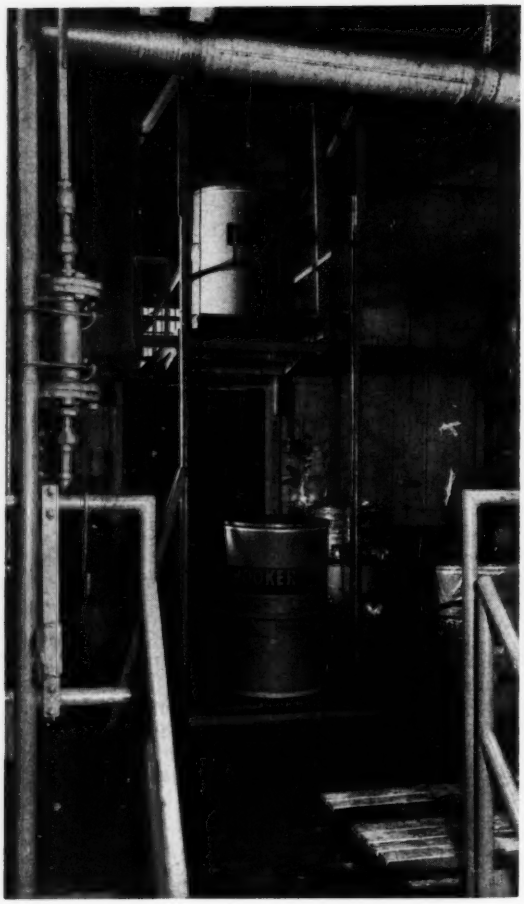
Your Inter-Floor Handling—continued



FOR LOWERING ONLY, this combination roller conveyor and chute delivers outgoing cartons from packaging on the second floor to storage shipping on first at American Greeting Publishers.



HYDRAULIC DOCK LIFT doubles as elevator for moving material from one level to another. This type device also works well in instances where two adjoining buildings with different levels are used by one company.



FOR HANDLING AWKWARD LOADS, this hoist operated roller section moves drums between levels. When lowered drum is removed, device raises, trips a lever, and next drum moves onto the roller platform.

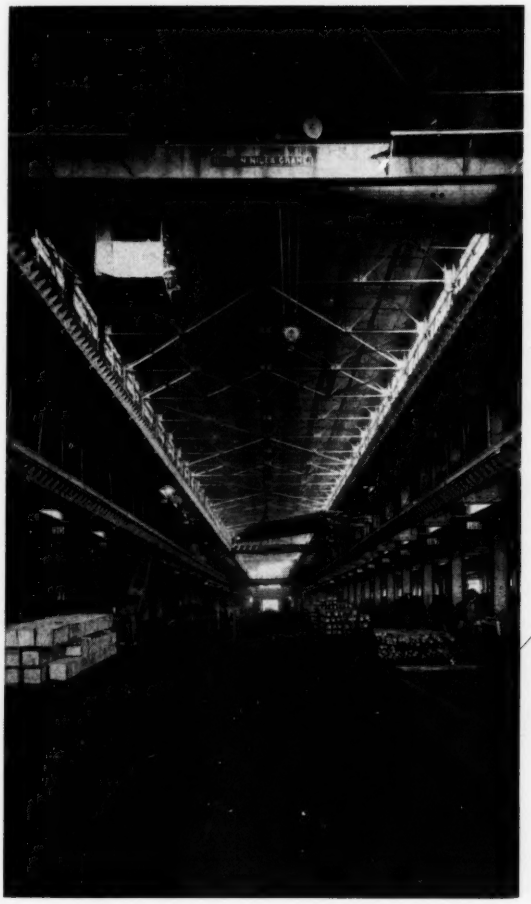
HOIST-OPERATED LIFT is used by Armstrong Products, Huntington, W. Va., to move goods between two floors. Lift is large enough to hold one caster-mounted carrier, is push-button controlled.

HERE ARE SIX QUESTIONS TO HELP YOU RATE

1. Are you jamming the efficiency of your elevators by moving too many loads on them that could be handled via other means.

2. Do your handling men and equipment have to wait lengthy periods for elevators to deposit their loads. Does this mean excessive non-productive time. (For an answer, see photo on a previous page).

3. Do your loads have to move lengthy non-productive distances between work stations and inter-floor handling equipment. Can you plan your flow more efficiently so that goods move almost directly from work stations onto vertical transportation medium.



TRAVELING BRIDGE CRANE moves goods both in a horizontal and vertical position. Large loads of bar stock are transported from balcony storage to rail cars. User: Naval Supply Dept., Norfolk.

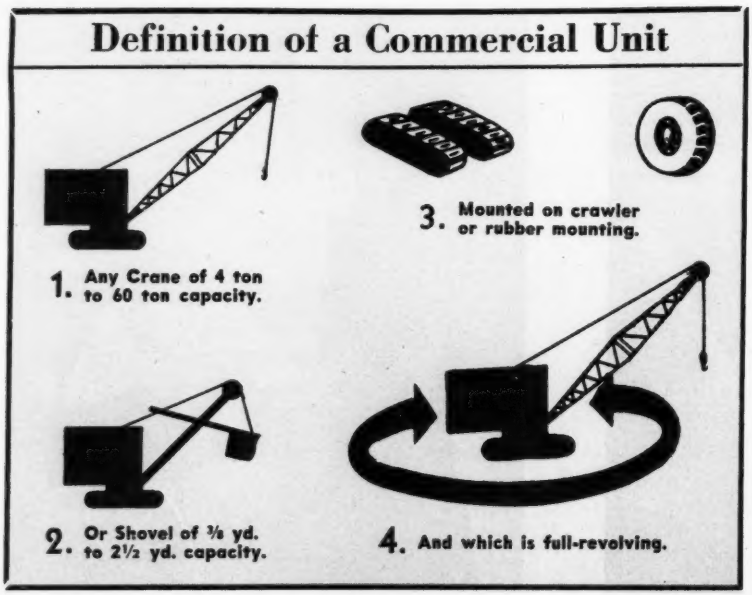
ENDLESS CHAIN CONVEYOR transfers partly-completed garments from the fourth to the third floor at Louis Walter & Co., Kansas City. Chain delivers goods to a pipe on which the loaded hangers ride to the lower level.

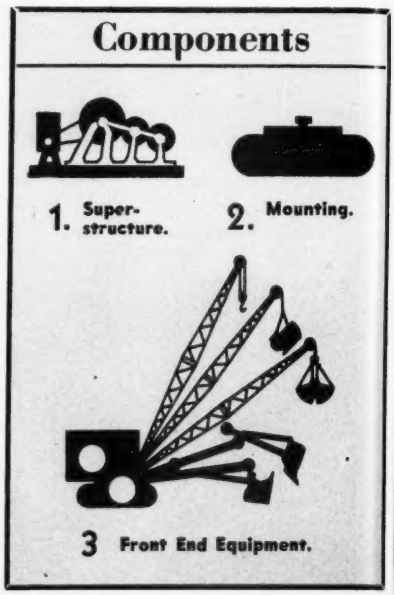
YOUR PRESENT INTER-FLOOR HANDLING METHODS

4. Is your layout such that feeding and receiving stations are directly above and below each other to make inter-floor handling as direct as possible.

5. Are your outbound goods coming from upper floors, directed out the upper floor windows and moved vertically outside the building to cut down inside inter-floor handling.

6. Do you now have handling equipment (or can you install handling equipment) that can also double to move goods between floors in addition to its present duties.


Definition of a Commercial Unit
1. Any Crane of 4 ton to 60 ton capacity.
2. Or Shovel of ⅜ yd. to 2½ yd. capacity.
3. Mounted on crawler or rubber mounting.
4. And which is full-revolving.



Power Cranes and Shovels: Part I —

About this survey . . . . .

This is Part I of a two-part survey, and covers: 1) basic functions and components, 2) the major basic types and 3) some considerations for their selection.

Part II, which will appear next month, deals with the proper care and maintenance of these machines.

Readers who desire additional information on these units may obtain a copy of Technical Bulletin No. 1 from the Power Crane and Shovel Association, 74 Trinity Place, New York 6, N. Y.

Power cranes and shovels are versatile units which are built with interchangeable booms or front end operating equipment to adapt them to particular jobs or operations. One of their main features is their ability to handle a wide variety of materials, shapes and containers under various conditions.

It is necessary to apply the machine's equipment, size and mounting to each individual job in order to get the best results from the unit, as no single machine will be suitable for each and every type of operation under all conditions.

15 Working Tools for Crane Boom Use

Clamshell Bucket

Dragline Bucket

Concrete Bucket

Magnet

Skip

Orange Peel Bucket

Grab

Sling

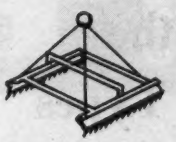
Grapple

Skull Cracker

Hook Block

Tongs

Hairpin Hook



Clamps

Special Hooks

I —Types, Components, Applications

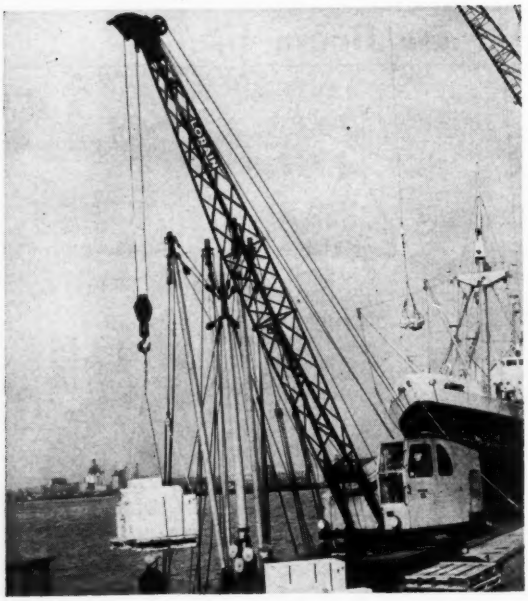
The five basic machines discussed in this survey are those which are generally included in the category of power cranes and shovels, and which may be converted from one type to another by changing the front end operating equipment. Although other types are available through the addition of further specialized equipment, these additional types are not primarily material handling units.

Basic Components and Functions

There are three basic operating components which are common to all power cranes and shovels, regardless of design or style. These are:

1. Revolving Superstructure. The revolving superstructure provides the power and basic mechanism for all operations and may be revolved through a full 360 degrees in either direction.
2. Mounting. The superstructure is placed on a mounting or base which may be either crawler, truck or wheel types. Crawler mountings are two continuous

Turn the Page Please ▶



1. Crane

These Are the Five Basic Types of Cranes and Shovels

4. Shovel

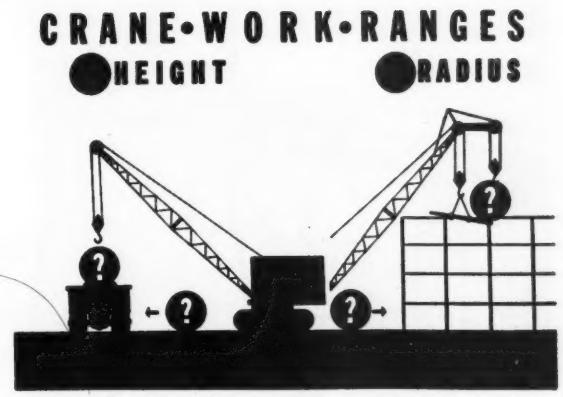
2. Clamshell

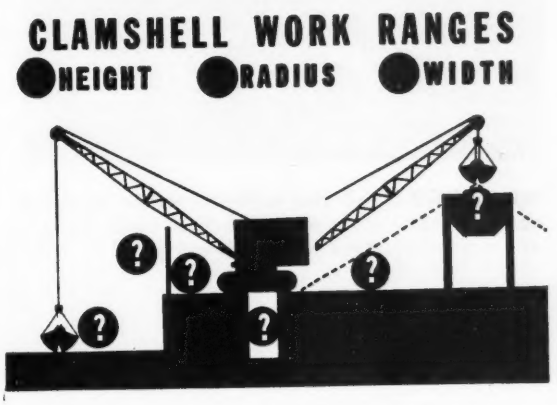
3. Dragline

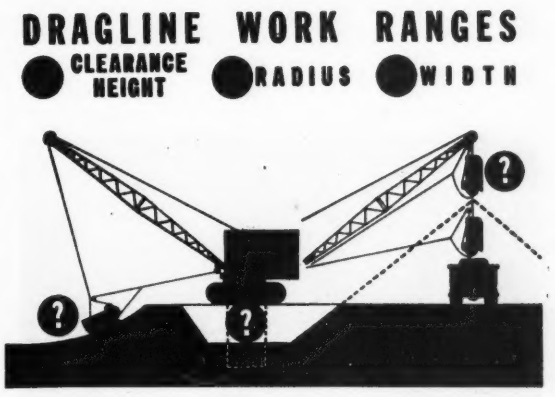
5. Hoe

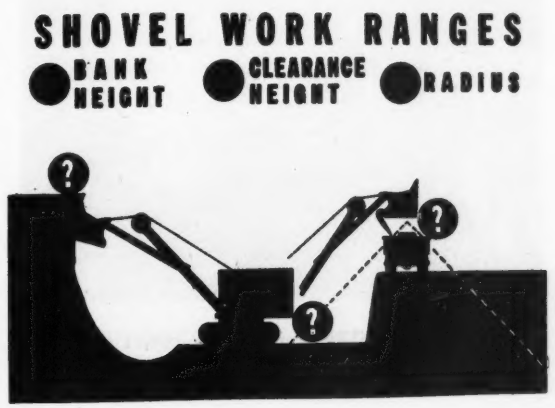
Some Working Range Considerations

1. **Crane**
   a. Maximum load to be lifted?
   b. Height and radius required?
   c. Any obstructions?
2. **Clamshell**
   a. What is dumping height?
   b. What radius is required?
   c. What is digging depth and width?
3. **Dragline**
   a. What clearance height is needed?
   b. What radius is required?
   c. What is depth and width of cut?
4. **Shovel**
   a. What radius is required?
   b. What is bank height?
   c. What clearance height is needed?









crawler belts made up of tread shoes or links driven by the superstructure engine. Wheel mountings are rubber-tired carriers which are propelled by the superstructure engine. Truck mountings are rubber-tired carriers which are propelled by separate engines.

3. Front End Equipment. The front end operating equipment consists of the various booms, equipment and attachments which determine the unit's type of operation. Most manufacturers can provide convertible and interchangeable boom equipment and other accessories.

Although power cranes and shovels are built in a wide range of sizes and capacities, those which are considered commercial units have a maximum crane lifting capacity of 4 to 60 tons, or a shovel capacity of from $\frac{3}{8}$ to $2\frac{1}{2}$ cubic yards. Of course, many units are built in much greater capacities than these, but they are usually machines built for specific applications.

Despite the many diversified operations performed by power cranes and shovels, their basic functions may be described as being confined to lifting material and moving it to a different location. To accomplish these functions, they depend upon four basic operations, one of which applies to shovels only.

These four basic operations are: 1) Hoisting, to raise the load; 2) Swinging, to move the load laterally to a new location; 3) Traveling, so the entire unit can be moved to and about the job and 4) Crowding, on shovels only, which serves to force the dipper into the material to be dug.

Lifting Cranes

Lifting cranes are used to lift loads, move them to a new location by swinging or traveling, and then lower or place the loads. The front end equipment which distinguishes the lifting crane consists of a crane boom, hoist drum laggings for desired line speeds and pulls, and a hook block for the lifting service required.

The many services to which lifting cranes can be adapted

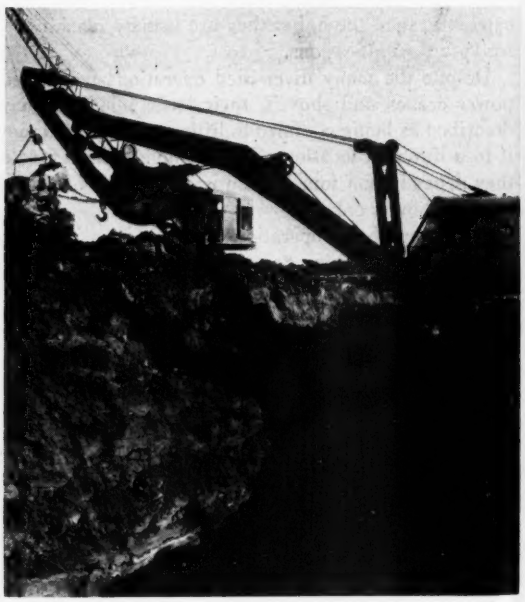
Photos on the next two pages
Text continues on page 94

PULPWOOD LOGS used in the manufacture of paper can be handled at the rate of 15 to 20 cords per hour with a crane equipped with a pulpwood grab.

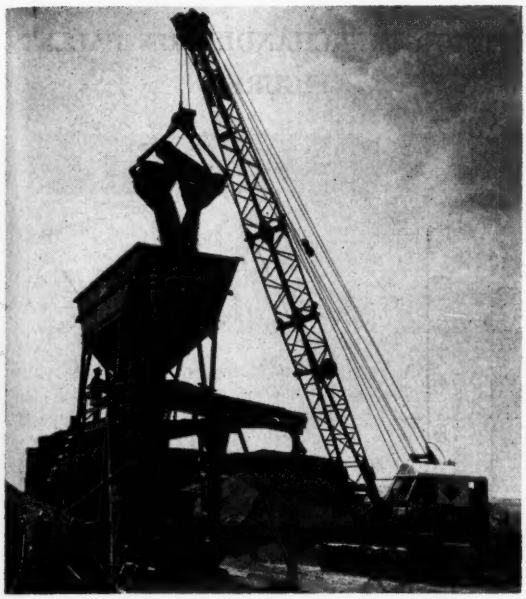
SCRAP METAL which might otherwise prove cumbersome to handle is easily picked up, moved and dumped by attaching a magnet to the hook block of the boom.

Some Typical Applications

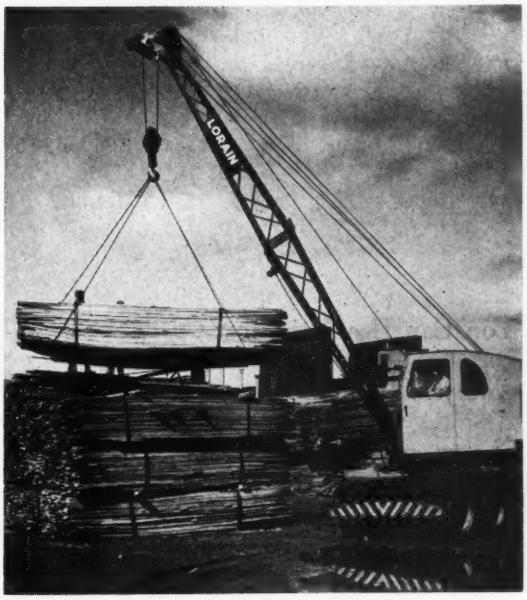
POURING CONCRETE in hard-to-get-at places on construction jobs is greatly simplified by using a concrete bucket on the crane boom.



PIPE LINE excavating is one of the jobs for which the hoe is ideally suited, since it cuts side walls and can grade the bottom of the trench.

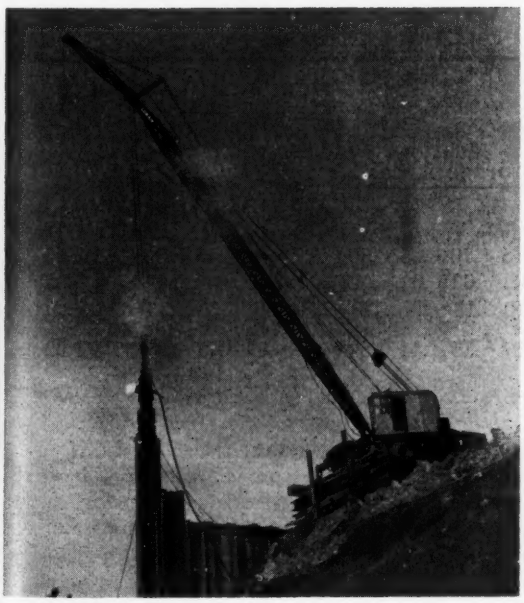


LOADING HOPPERS is only one of the many applications possible with the clamshell, a versatile unit widely used to handle various bulk materials.

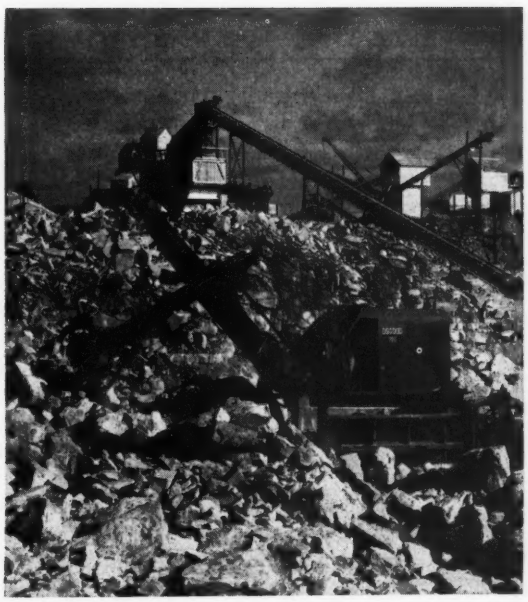


LUMBER PILES are quickly built up by lifting and moving large loads with a crane and sling. This unit is truck mounted for better mobility.

# of Power Cranes and Shovels



PILE DRIVING, as shown here, is done by holding an air or steam power hammer in position on top of the piling. Another way is by the drop hammer method.



DIGGING ROCK and dumping it into trucks is a typical shovel job. Belt conveyors (see background), are often loaded directly by shovels.

STORING MERCHANDISE ON PALLETS

FIGURE 1

You Can Use This Cost Analysis Plan Shown on This Page to Compute How Long to Leave Your Pallets In Storage

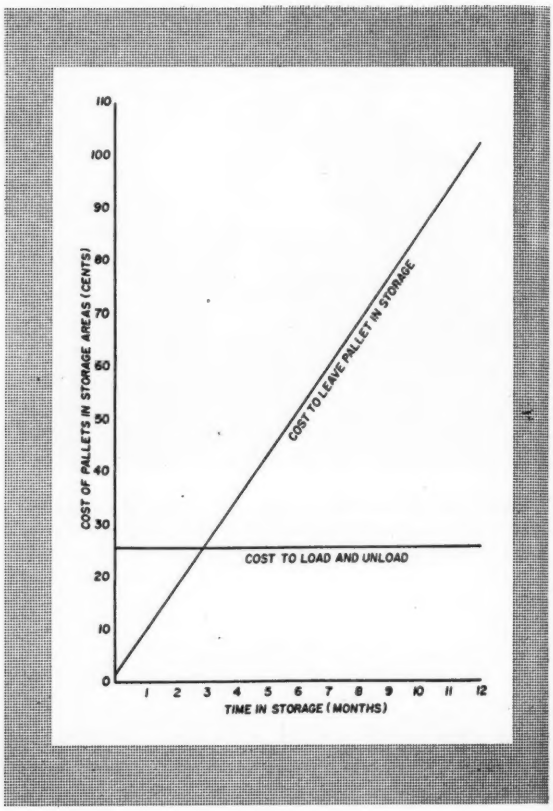


Figure 2

Cost Of Pallets In Storage Areas

Time in Storage (Months)	¼	½	1	2	3	4	5	6	7	8	9	10	11	12
Deprec. of Pallet per Handl.	.012	.025	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60
Maint. of Pallet per Handl.	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Space cost per pallet per Handl.	.007	.015	.03	.07	.10	.13	.17	.20	.23	.27	.30	.33	.37	.40
TOTAL COST PER HANDLING	.039	.060	.10	.19	.27	.35	.44	.53	.60	.69	.77	.85	.94	1.02

The above cost analysis is based on the following data:

Space value 6c per cu. ft. per year

Value of Pallet $3.00

Size of pallet used 48" x 40" x 6"

Depreciation rate on pallets 5 years

Cube occupied per pallet 6.7 cu. ft.

Maintenance of pallet 2c per load

FLOW SURVEY REPORT

Storing Needed Pallets With Inactive Merchandise Can Waste Money By Tying Up Expensive Space And Valuable Carriers. Here Is One Approach to Figuring When To

Take Your Pallets Out of Storage

One of the questions which arises when storing load units is whether to store the pallets with the merchandise or unload the pallets so that they can be used for other purposes. In other words, is it more economical to unload pallets at the storage area, stack material by hand, then reload the pallets when the merchandise moves out?

There are several variables involved so a suggested approach to the answer follows with estimates provided in order to explain the procedure. This approach was developed by Walter McClelland, owner of the W. B. McClelland Co., Cleveland.

A cost analysis sheet titled "Cost of Pallets in Storage Areas", see Figure 2, left-hand page, may be useful as a means of calculating the cost of leaving pallets stored with materials.

Certain data must be obtained for this calculation (substitute your own cost data):

1. Cost of pallets. (example: $3.00 each)
2. Depreciation rate on pallets. (example: 5 years)
3. Repair cost on pallets (example: 2c for each load handled)
4. Value of storage space. (example: six cents per cubic foot per year)
5. The size of pallets used. (example: 48" x 40" x6")

With this information the calculations necessary to complete the suggested sheet can be made. The calculations indicate that the pallet cost ranges from four cents per handling if turnover is once per week to one dollar and three cents if the pallet remains idle for a year.

Here is how to estimate the cost of the alternate idea, that is to deposit the pallet load in the storage area, unload the pallet so it can be used for another load, then reload the merchandise on pallets when it moves out of storage.

Again, some data must be obtained:

1. The labor rate applying to men doing such handling work. (example: $1.25 per hour)
2. In addition to the amount on the paycheck, the cost of other items such as social security, unemployment insurance, payroll expense, locker costs, etc., involved in keeping employees on the payroll. (example: 5% of the paycheck)
3. The number of pallet loads a man could unload in an hour. (example: ten)
4. The number of pallets a man could load in an hour. (example: ten)

With the above information the cost of loading and unloading each pallet can be calculated. (using the above examples, the cost would be 26c per load)

By plotting a chart the break-even point can be indicated (See Figure 1). Based upon the estimates made, it is indicated that the pallets should not be unloaded if merchandise will be stored three months or less.

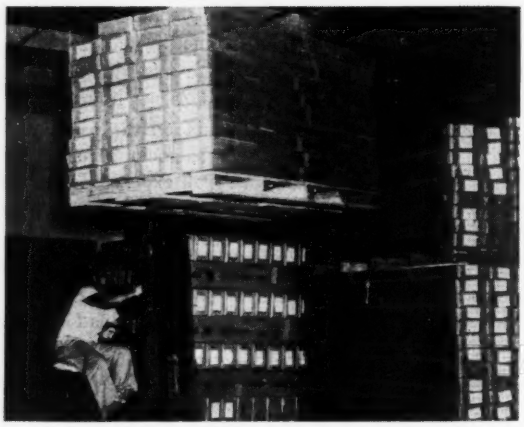
Other Considerations

This may look like a straight-forward analysis, but circumstances alter cases. If every pallet available was needed elsewhere and space was urgently needed also, this might be a logical basis for decision. If possessed storage space was but partially occupied there would be no increment space charge, however, for leaving pallets with material. Also if pallets on hand cannot be used for other purposes, there would be no added fixed charges on pallets if stored with merchandise. Thus, if space and pallets were plentiful, the only added costs of leaving them in storage for any length of time would be the estimated cost per handling for repairs.

COST CUTTING BRIEFS . . .

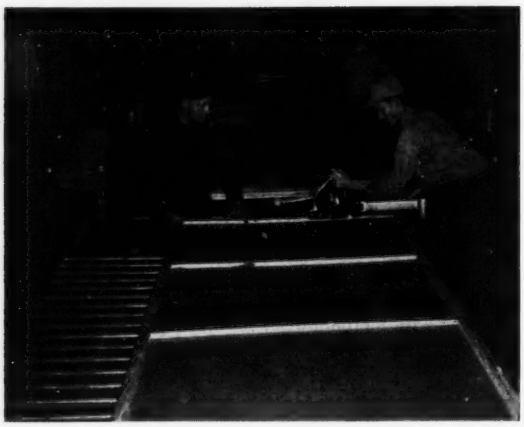
STOCK SELECTION . . . .

Trailer trains are used by Sears, Roebuck & Co. in the shipping department of its Philadelphia warehouse. Trains, usually consisting of five trailers make the rounds of the storage area and are loaded enroute. This has resulted in increased speed and economy in filling small diversified orders. Daily load with three powered trucks is about 150 trailers.



PALLETIZING FRAGILE ITEMS . . . .

Two four-ft. pallets placed side by side are used by the Sylvania Electric Products Co. to handle and store eight ft. long fluorescent lamps. Lamps are placed on the pallets to build up a unit load and fork truck moves its forks into adjoining openings in the two pallets. Weight of the cartoned lamps prevents buckling although the lift is applied off-center on each pallet. Loads contain anywhere from 40 to 72 cartons of the eight-ft. lamps.

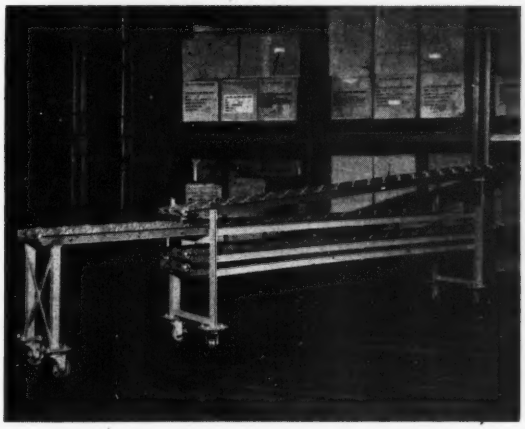


SHIPPING SHEET METAL . . . .

Roller conveyor is used in the shipping department of the Aluminum Co. of America, Pittsburgh. Empty boxes are first placed on the line, and metal is placed in them while they are moving along. The boxes are then closed up and banded before moving along where they are weighed and the shipping tickets attached. At the end of the line, boxes are ready to go to the customer.

UNLOADING LARGE QUANTITIES . . . .

Telescopic conveyor was constructed at the Naval Supply Depot, Great Lakes, Illinois, to facilitate unloading boxes of clothing from commercial vans. Usable at lengths from 10 ft. to 40 ft., the conveyor can be elevated and inserted into the carrier at one end. The other end can then be extended to stacking point in the store room.

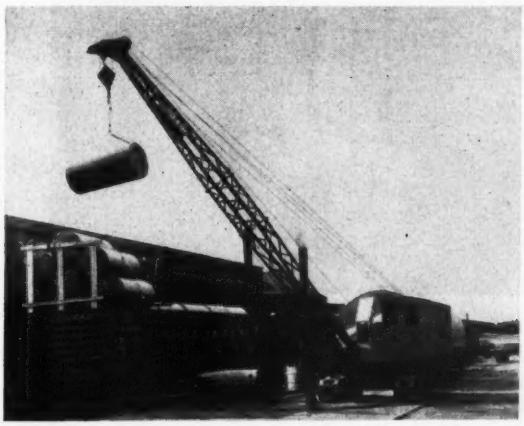


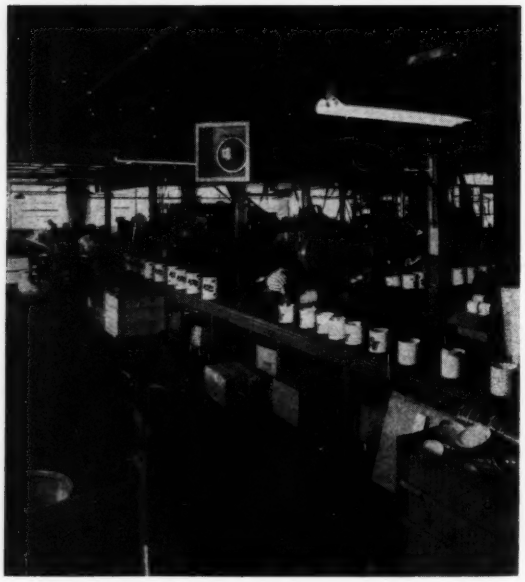
HANDLING IN PROCESS . . . .

Chain driven wire mesh belt conveyor with special retaining guard plate edges is used by Perfection Tool & Heat Treating Co. to remove heat treated wrenches from oil quench tank. The open mesh provides complete drainage and all surplus oil is returned to the tank. Special fabric cleats convey wrenches up incline. So far, operation has been trouble free, and apparently will enjoy long life.

LIFTING LARGE TANKS . . . .

Hairpin-type hook, for use with lifting crane, is used by the Columbian Steel Tank Co., Kansas City, Mo., to lift tanks into cars for shipment. With this time and labor saving device, it is only necessary to slip the hook into the filler holes of the tanks. The hook is offset so tanks are balanced properly for easy handling and stacking.

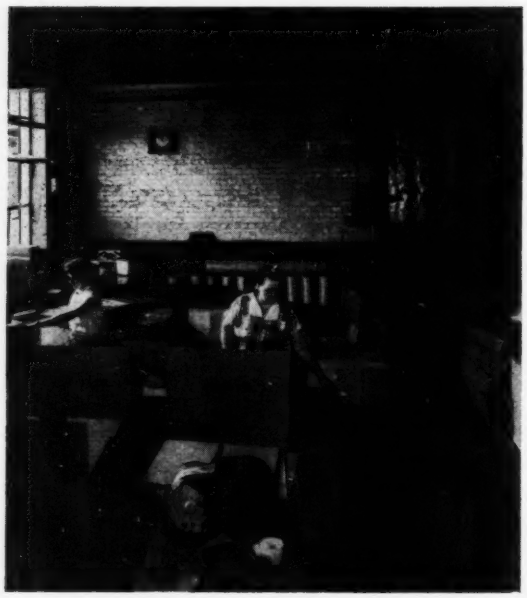




1 **CONTINUOUS TRANSFER** between machines and from assembly department is made on belt conveyor. Note that valuable space is conserved at and around machines.

2 **90° TURN AT END** of first conveyor is made by guides on both that and receiving belt. Assembly operations are continued as the second belt passes the work tables.

There's Continuous Inter-Department Flow with this System



3 **PACKAGING STATIONS** are located at end of second conveyor. Cartons go to shipping via roller conveyor, rear. Fire door fits snugly over line if fusable plug melts.

4 **CARTONS TRAVEL** inside tunnel to shipping. Three aluminum arms at rear are hinged, permit unusually high cartons to pass through, prevent nosing over on steep section.

Conveyor System Ties In Assembly, Packaging, Shipping

This simple yet effective conveyor system has tied in all phases of assembly, packaging and shipping and at the same time increased production 31%.

The user, The Parker Metal Decorating Co., Baltimore, adds with satisfaction that the installation paid for itself in less than one year.

Good Layout Was The Key

Briefly, here is how the system operates (progressive layout was the key to well engineered flow).

Units (housewares, cake and candy tins, signs and displays) are fed directly from machines, located along the line, onto the conveyor. As they travel toward the packaging department, components and completed units are removed and replaced for assembly operations.

At the packaging area, completed units are removed and packed in cartons, sealed, and returned to the conveyor for delivery to shipping.

Incentive System Pays Off Too

The company also reaped handsome dividends from an incentive system which made its bow some time before the new handling system. Here's how it works.

A standard production per hour was set for each kind of product. Those assigned to work on a given item were paid a production bonus based on the group output. Where, for example, the production is 118% of standard, each worker receives 18% bonus on his or her earnings. There is, however, no penalty for production under 100% as each worker is guaranteed a minimum hourly pay rate.

DETAILS OF CONVEYORS NO. 1 & 2:

No. 1—91′ long with a 24″ wide cottonbelt; powered by a 1½ H.P. motor and equipped with a variable speed drive of from 40 to 100 ft. per minute.

No. 2—same as first except that conveyor is 111′ long.

Note: goods are transferred between the two belts (operating at right angles) by two deflector arms.

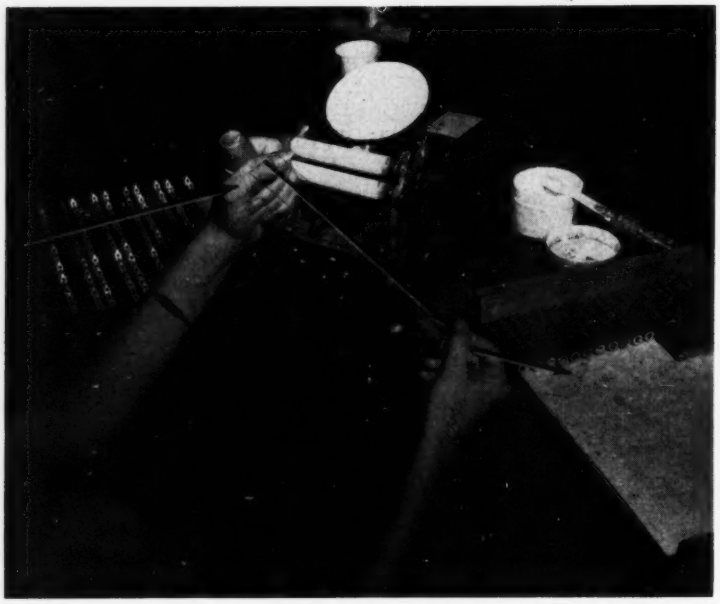
DETAILS OF REST OF SYSTEM:

To form an "S" turn to go from packaging to a tunnel leading to shipping (on different floors), a 90° tapered roller gravity conveyor is matched up with an 85° section in the other direction. Rollers feed packages to an 18′ belt set at an angle of about 7½°. On the first floor, this belt feeds a 16′ decline conveyor set at 28° (equipped with rough surface belting). Finally, a 6′ horizontal take-off section delivers to a smooth-top table in shipping.

BENEFITS OF THE NEW SYSTEM:

1. **Production Increased 31%.**
2. **Short Amortization Period (less than 12 months).**
3. **Continuous Flow Between All Departments.**
4. **No Intermediate Handlings Between Floors.**
5. **No Manual Effort.**
6. **Minimum Operator Fatigue.**

Old Method: "Too Much Hand Movement"



THESE TWO EXAMPLES SHOW THE AMOUNT of hand movement that used to be required at one work station to process or test resistors. The operator picks up the part from the tray at the extreme left, transfers it to the machine. She then removes the part with her right hand or transfers it from her left to her right hand, then places it in the tray at the extreme right. Arrows show route of travel.

ANOTHER EXAMPLE OF TOO MUCH HAND HANDLING: operator takes part from tray and places it in testing spot in front of her. She then moves her left hand forward to regulate testing equipment. Finally, her right hand transfers the part to the tray at her right. Again, lines are used to show the number and direction of moves necessary. Now compare these methods with those shown on the opposite page.

Motion Study Savings In Parts

To prove that a large handling economy can result from a tiny change, International Resistance Co. chose as an example the transferring of resistors between trays and processing, then to other trays. This move was common to every operation in the department, but from a quality viewpoint, was necessary in only 45% of the operations. For the remainder of the operations, a drop disposal chute could be substituted for the old hand transport method. At a hasty glance, such an improvement would appear negligible to other than methods engineers, so this example was an ideal case study.

At this point, through established Methods and Standards practice, the changes were installed in the test department and new production standards established.

The verification of any material handling cost reduction is, of course, the increased units handled per man-hour. This methods change would be of no value to the company without

The Formula:

1. **The time involved in a change of method amounts to X minutes per occurrence.**
2. **The elimination of this small motion amounts to X number of man hours per year.**
3. **The change of method on one operation can start a chain of similar improvements in other operations.**
4. **The present method can be improved, aiming towards eliminating all waste motion no matter how petty is seems.**

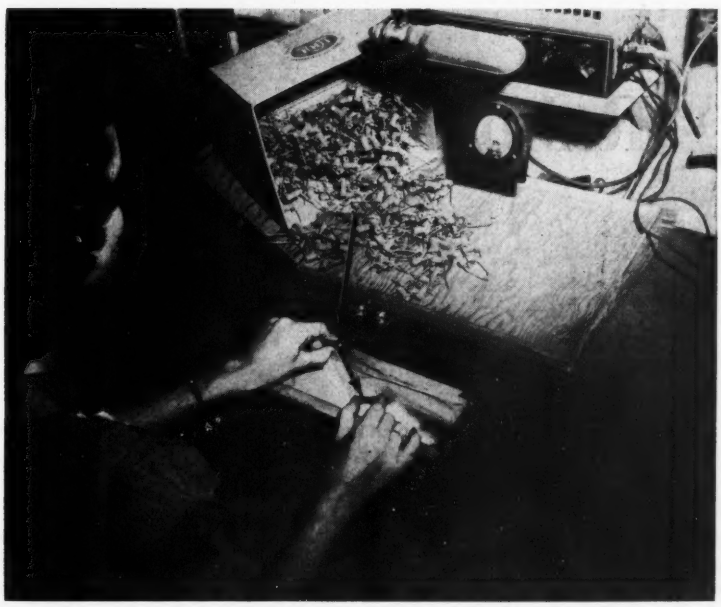
New Method: "Direct Savings, $5500"

Develops Big Small Handling

an increase of units handled, which is a reduction in material handling costs. In this instance, the verification of the relative costs of the new methods was not difficult, since the operations had established wage incentive standards. The new method in each operation was restudied on the basis of change of methods. Based on the analysis of these studies, the wage incentive standards were revised to call for an increase in production. The fact that the operations working against the new standards did not have a drop in incentive earnings due to the new wage incentive standard is further indication of a "real" saving.

In addition to the cost savings resulting from the new method of hand-handling (which are given at the bottom of this page), another startling fact was noted. The distance saved in hand movement amounted to 19" per occurrence and on the six operations equaled 4320 miles per year.

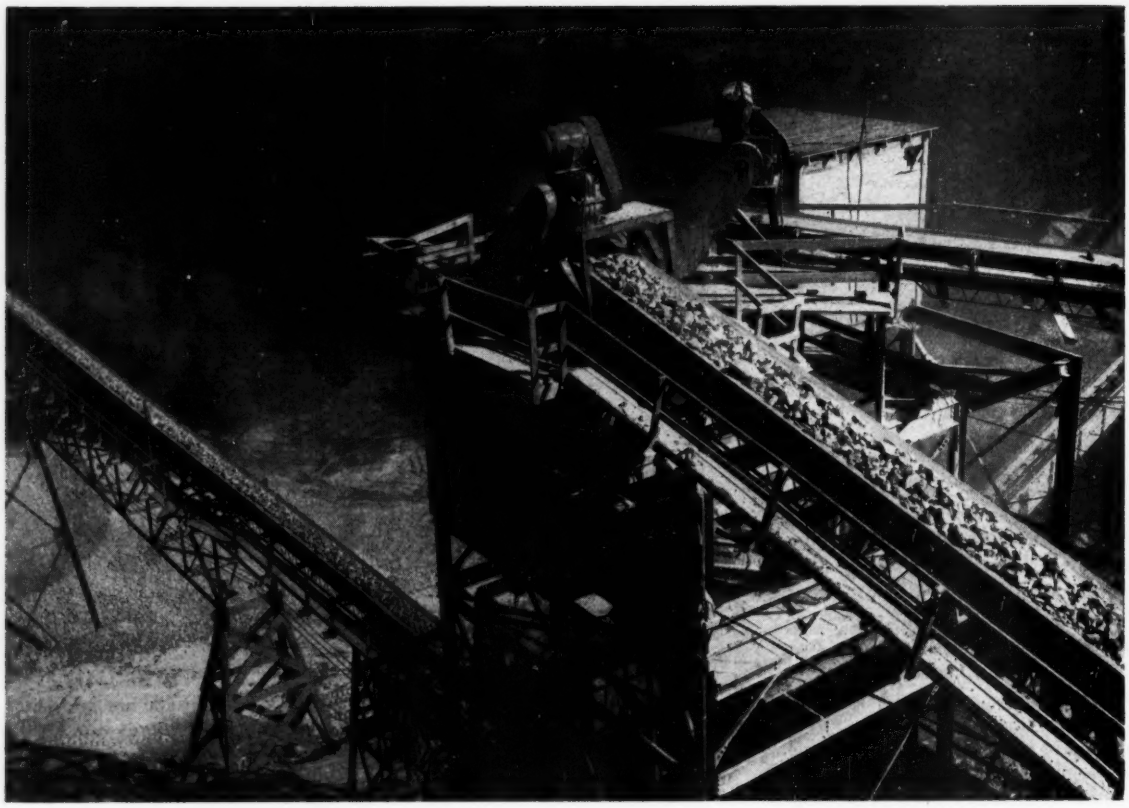
NOW, ONLY TWO SHORT AND DIRECT MOVES are needed to transfer parts from tray to processing, to a chute which moves the part into a container. The operator picks out a part with her left hand and with a short move deposits it in the machine. As her right hand moves the part from the machine to the chute, her left hand is selecting another item. Movements are now almost continuous.



TESTING IS ALSO FAST, DIRECT. Part is moved from table toward the operator, is fitted in testing position. The right hand is then used to advance the part into the chute. I.R.C. lists the following results from the changes in hand handling: (1) time saved per year based on present production schedule was 4550 hours; (2) direct savings per year were $5500; (3) distance saved per operation was 19 inches.

The Results:

1. **Time saved per unit occurrence was .0112 units.**
2. **Time saved per year based on present production schedule was 4550 hours.**
3. **This hour figure is equivalent to the time of 2.25 operators (who were used more productively on other operations).**
4. **The direct savings per year were $5,500.00.**



GOOD MAINTENANCE has kept this belt running for years, carrying millions of tons of rock.

Rubber Conveyor Belting: Part II

Your Rubber Conveyor Belt Is an Expensive Investment

It's a known fact that an effective maintenance program for rubber conveyor belting can add years of service — in fact it can mean that a belt may last five times longer than one which is neglected or abused. And good maintenance is possible at a surprisingly low cost. Here are the details of such a program.

Proper care of belting can be better understood if the fundamental functions of its components are kept in mind. That is, the reinforcing member or carcass supplies the structural strength, while the rubber cover and insulation serve primarily to protect the carcass.

Rubber can stand up well against abrasion and even against the impact of sharp, heavy material, as long as it is not distorted beyond its elastic limit. When the rubber-cushion cover of a belt is distorted beyond its capacity to recover, the rubber surface is cut and broken and the protective cushion torn away. When this happens, the fabric or cords are exposed to abrasion, wetting and other damage hazards.

This damage occurs when heavy or sharp lumps drop on them, when a belt edge or cover rubs against obstructions and skirt-boards, or when pieces of material are caught between the belt and a pulley. When such conditions are present, more harm can be done in a few days than would result from years of normal service.

POOR MAINTENANCE caused an obstruction to tear this belt long before its expected lifetime.

— Proper Care and Maintenance

So Take Care of It and You Will Get Dependable Service

Belt Splices and Fasteners

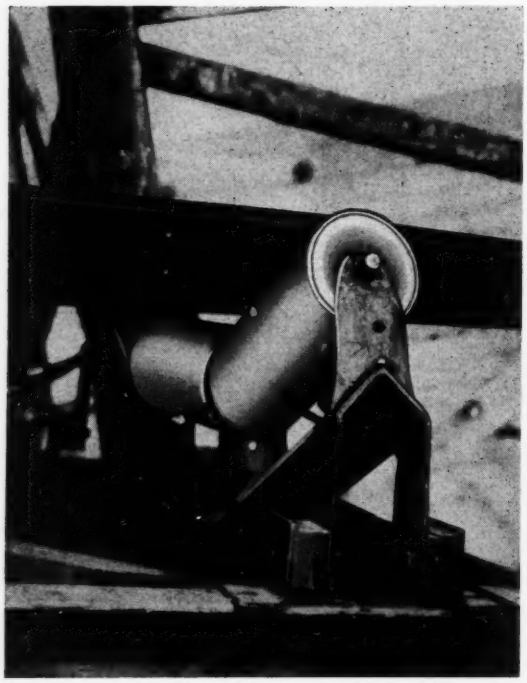
Before any splices are made, the position for splicing should be determined. It is more convenient to splice on a horizontal than on an inclined run, and a substantial flat table will facilitate the work. On an inclined or declined conveyor, it is easier to handle the belt at the lower end. On outdoor installations, a permanent shanty may be provided so that repairs or splices can be made in bad weather. An I-beam can also be installed in the ceiling to provide a track for a small hoist to permit easy handling of portable vulcanizers.

Belting can be spliced in one of two ways: with metal fasteners or by vulcanizing.

Metal Fasteners. Metal fasteners are often used where it is necessary to frequently change the length of the conveyor system. One recommended type of fastener gets its holding force by the clamping action between two plates, as well as the straight-pull strength from the anchor screws. In underground work where pulleys may be less than the recommended diameter, hinge-type fasteners are sometimes preferred. One such type uses a clamping anchorage with a flexible cable or coiled steel pin for the pivot rod. The flexible hinge permits belt troughing. For small or medium-sized belts, hooks with staggered prongs are commonly

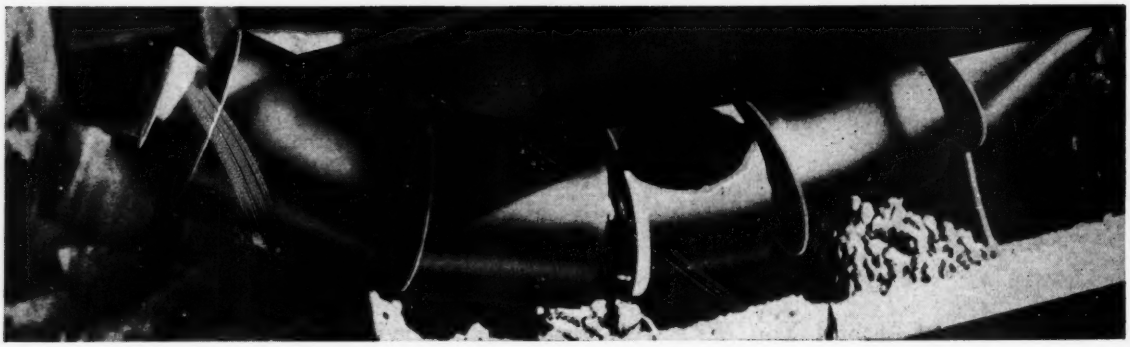
Turn the Page Please

Here Are a Few Ways



USE STIFF BELTING with too many plies in proportion to its width so it will make insufficient contact with idlers and run crooked.

POUND YOUR BELTING with heavy lumps by having loading chute located over pulleys. Don't minimize the damage by using impact carriers.



DON'T INSPECT IDLERS to see whether they are sticking from lack of lubrication or from being clogged by fine material. Let the belt wear away the rim to produce sharp, pointed edges that will slice the belt.

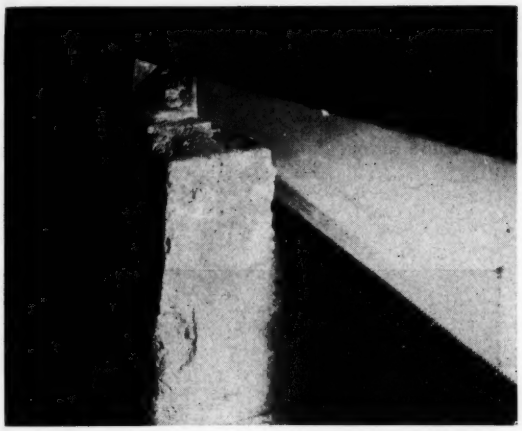
used. These prongs should clinch lengthwise strands of fabric.

Heavy, unyielding fasteners do not flex properly over small pulleys. Consequently, the splice is sometimes made at a 45 degree angle when small pulleys are used, and the fasteners are applied normal to the cut. In any event, the recommendations of the fastener manufacturer should be consulted carefully as to size of pulley and thickness of belt.

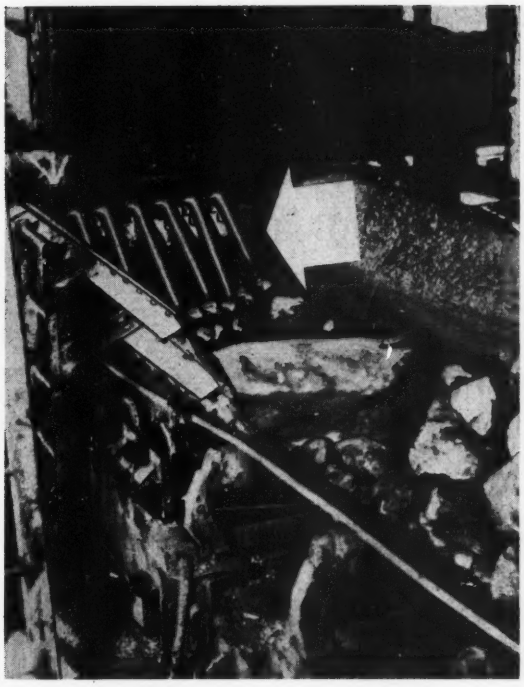
Vulcanized Splices. The development of portable vulcanizing equipment has made it possible to make vulcanized splices in the field. Most vulcanized splices in plied belts are approximately as strong as the belt itself, with one ply subtracted.

Where it is desirable to use a vulcanized splice, and take-up is limited, the belt may at first be spliced with metal fasteners. After the belt has run for several months to eliminate most of the initial stretch, the metal fasteners are removed and a vulcanized splice made. When using this method, the take-up pulley should be kept out near the maximum position so there will be sufficient belting to step down for a vulcanized splice.

to Ruin Your Belting



DON'T ALIGN EQUIPMENT because then the belt will be able to rub against supports to cause edge wear and a subsequent breakdown.



DON'T USE DEVICES like these deflection bars (arrow), through which fines drop first and act as a cushion to break the fall of heavy material.

LOOSE RETURN IDLERS should be neglected, so they can slide out of place and let the belt scrape and rub against the shafting (arrow). This not only wears away the edge of the belt, but causes eccentric running.

Crooked-Running Belts

One of the most baffling problems that can confront the user of a belt conveyor is to determine the cause of a crooked-running belt and then find a remedy. Since a large percentage of premature belt failures are caused by eccentric running, the time and effort spent in solving such problems have real dollar value.

If deviation from a straight line occurs at the same place on the conveyor, the equipment is not properly aligned and needs adjustment. However, if the belting deviates from a straight line at the same spot on the belt regardless of its location on the conveyor, the belt itself is at fault.

Although the most common cause of eccentric running is probably in misaligned equipment, improper splices often cause belts to run crooked. When the part of the belt that tends to run off the idlers is in the vicinity of the splice, the belt ends probably were not cut square when the splice was made. To make certain belt ends are cut square, they should be cut at right angles to center lines, rather than to edges. A safe way is to draw a center line

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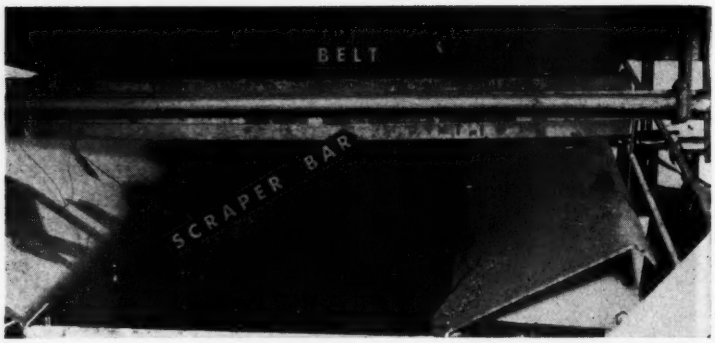
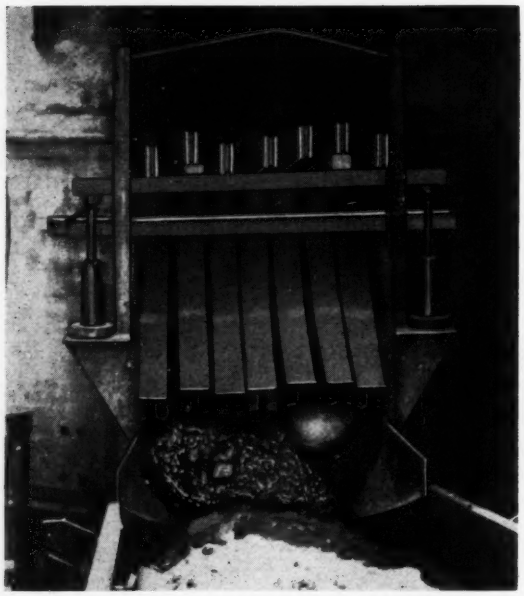
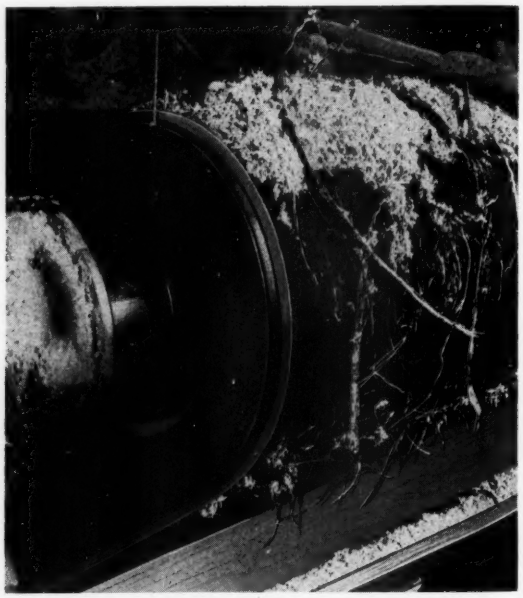
. . . and Here Are Some Belt-Saving Devices



SCRAPER BARS will keep belts clean by removing material that adheres to the belt and which may cause serious damage if trapped between the belt and a pulley.



JINGLE BARS will slow down lumps if chute discharges some distance above the belt, or is so steep that lumps fall with great velocity.



MAGNETIC SEPARATORS may be installed on feeder belts to free the material being carried of any sharp pieces of tramp iron or steel.

extending back at least 10 or 15 feet from each belt end where it is cut.

Sometimes a belt becomes crooked because one edge has been worn off. If operated under high tension, a worn edge may have become stretched more than the rest of the belt. Under very moist conditions, exposed fabric along a worn edge may shrink as a result of moisture absorption.

No attempt should be made to straighten a belt by an unequal adjustment of the take-up screws. The end pulley should be set in alignment and kept that way. It is also a mistake to make a belt run straight by increasing tension excessively.

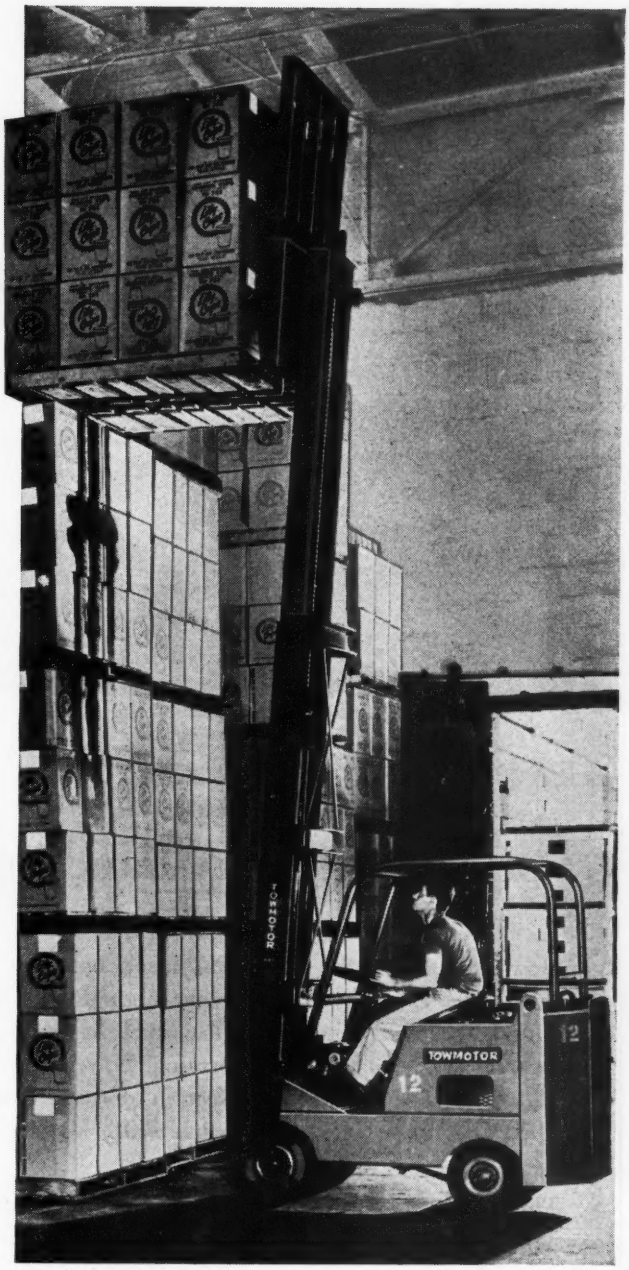
Insufficient belt contact with troughing idler rolls is another cause of eccentric-running belting. Thus, stiff belts that have too many plies in proportion to their widths, sometimes run crooked. A belt operating with a load too light to press it properly against idlers may not run straight, and the remedy is to increase delivery or reduce speed of belt to permit a heavier load.

Because of imperfect contact with the idlers, a belt is likely to run crooked when first installed. After the belt has been in use for a time, it conforms more snugly to the carrier and runs straight if there are no other reasons for misalignment.

If the belt itself is not the cause of eccentric running,

(Continued on page 80)

20-ft. of Power



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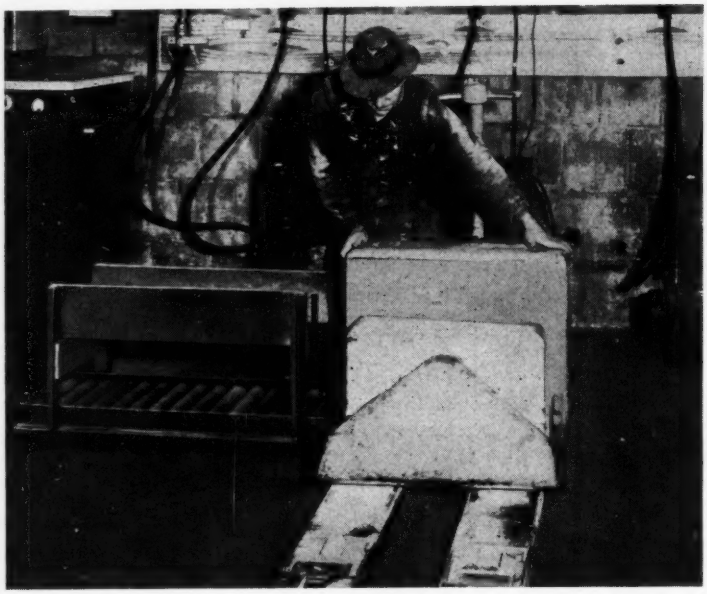

For easier battery handling . .

How do you handle industrial truck batteries in your plant? Do you feel that your present method is too time consuming and costly? Here is an idea which has paid off many times over at the Distribution Terminal Warehouse in Cleveland. It incorporates a four-ft. section of roller conveyor as the bed of a four-wheel battery cart. Batteries can be rolled on or off this cart instead of lifted.

This is how one of the battery carts is constructed. First, a caster is attached to each corner of the conveyor section. Then structural angle is welded perpendicular to the frame and on the opposite side from the casters in each corner. As shown in the accompanying illustration, this forms a framework to enclose the battery. Bracing of 2″x8″ scrap lumber complete the job.

In use, the cart is wheeled into position next to a truck, and the battery is rolled onto it. Then the cart is wheeled to a charging location. At this plant, there is a separate cart for each battery in use, making it unnecessary to unload carts during charging. The result is elimination of a great amount of handling and waste time.

the trouble may lie in one or more of the following:

Idlers and Pulleys. If a belt persists in climbing sidewise on the same idlers, the fault lies in the alignment of the idlers or pulleys. Sometimes an idler becomes loose and slides to one end of its shaft, permitting the belt to fall against the shaft and be guided sidewise. Occasionally an idler becomes stuck on its shaft. This tends to deflect the belt, and also to wear away the idler, exposing sharp edges that may damage the belt. Idlers should be periodically inspected and lubricated. Tilting of the idler rolls in the direction of travel is beneficial in keeping belts running straight. Conversely, rolls tilted in the direction opposite to belt travel are a source of considerable poor belting behavior.

Misaligned Supports. Conveyor supports may be out of alignment when the conveyor is erected on a temporary or insecure foundation.

Obstructions. Many of the obstructions in the path of a belt are needless, such as beams and other supports, nails, and sharp edges of metal and concrete too close to the belt. Proper guidance of the belt, plus practical elimination of hazards, will often prevent considerable belt damage.

Trippers. Trippers that are not in good adjustment can cause misalignment and edge wear. Since there is less clearance between the belt and framework at a tripper, only a slight misalignment can cause the belt edges to rub. To avoid this trouble, trippers should be inspected frequently.

Material Accumulation. The building up of material on a snub pulley or return idler may cause the belt to run off as it approaches the tail pulley, resulting in edge folds or creases. Consequently, transverse edge breaks will occur at somewhat uniform intervals, depending on tail pulley diameter and the elongation characteristics of the belt carcass.

Unequal Loading. If a belt runs true when empty but tends to climb off the idlers when carrying a load, the trouble is almost certain to lie in unequal loading. The heavier-loaded side of the belt will slide toward the middle of the carrier, causing the other edge to climb. Un-

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5. Worm runs on radial and thrust ball bearings to protect against damage from shock loads.
6. Four-bevel-pinion differential doubles tooth contact, distributes load evenly, minimizes maintenance.
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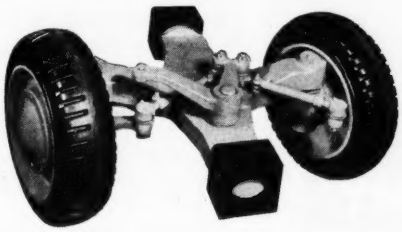

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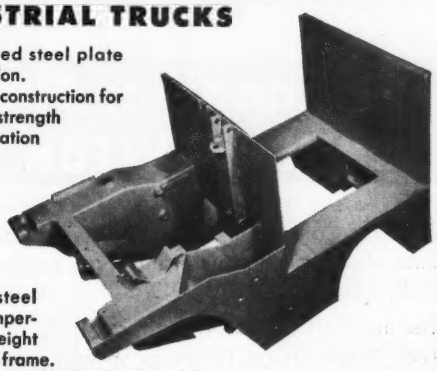

3. Integral steel plate bumper-counterweight welded to frame.
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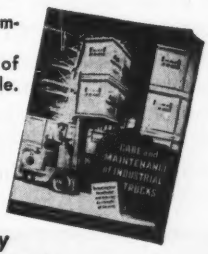

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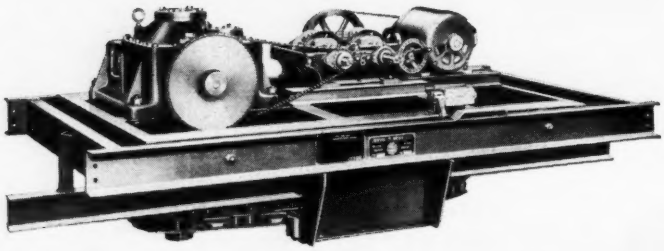
FLOATING DRIVE with AUTOMATIC CUT-OFF and LOAD INDICATOR



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The motivating power unit on both the Caterpillar and Sprocket type Webb drives floats on wheels against heavy springs. When a conveyor starts, the initial shock is taken by these springs.

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equal loading generally occurs when material is delivered from a chute that is not in line with the direction of belt travel. Specially-designed chutes will keep peak loads in the exact center of the belt. In addition, the belt must be delivered from the tail pulley to the loading point in proper position. Consequently, necessary adjustments should be made to insure correct running of the return strand of the belt.

Windage. A belt can be forced out of line by wind blowing against it. Erecting wind baffles or improving the existing belt housing may be the cure. Another remedy is the use of self-training idlers.

Excessive Tension

Here's a rule of thumb to determine when a conveyor belt is operating at a satisfactory tension: the initial tension is reasonably close to being correct if the belt is loose enough to trough properly and train while running empty, and tight enough to pull its load.

A belt operating under excessive tension is doubly susceptible to damage and wear. Tension not only strains the drive mechanism but also puts an unnatural stress on the belt, which tends to weaken splices and to enlarge any cuts or breaks the belt may have suffered.

Excessive tension may reduce the troughing action of a belt, and lessen its contact with the idlers which guide the belt. Any reduction or friction or pressure between the idlers and the belt tends to reduce the training action. Furthermore, increasing tension can result in over-heated bearings and pulleys or shaft failure due to fatigue.

Common causes of excessive belt tension are:

1. Loading a belt beyond the weight or size of the load originally calculated when the belt was installed. (It may also be possible that the original calculations were incorrect.)
2. Increase of frictional resistance because of improper maintenance of idlers.
3. Excessive tightening of the belt through take-up screws or by oversize take-up counterweights.
4. Shrinkage of the belt as a result or absorption of moisture.
5. Excessive crown of tail and

Panel discussions on how casters help reduce the **"Reducible 30%"***

MATERIALS-HANDLING FORUM

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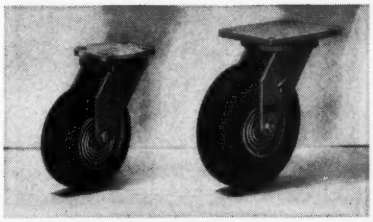
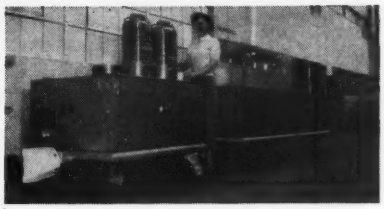
"FLOATING-HUB" WHEELS PROTECT LOADS

In Bassick's unique "Floating-Hub" construction, the caster wheel, spring-controlled, actually "floats" in the frame, providing mechanical resiliency between the rim and axle.

It makes trucks and portable equipment as easy riding as a fine automobile.





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Slosh and spill of liquids in food carts, portable plating tanks, etc., equipped with Bassick's "Floating-Hub," is minimized.

All Wheels in Contact with Floor at All Times

The "Floating-Hub" construction keeps all wheels in contact with the floor, even on rough bumpy surfaces. The result is an even load distribution and elimination of destructive caster shimmy.

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The smoother, more even ride of "Floating-Hub" safeguards the movement of highly-finished auto bumpers, ceramic products, glass and china ware, loose loads of small parts... innumerable fragile loads.

Shock Absorption Important Advantage of "Floating-Hub"

The "Floating-Hub" rides with the punch, backs away with the blow and at the same time starts its climb. This unique ability reduces impact force. That's why it's vitally important on power-pulled trailer trucks.

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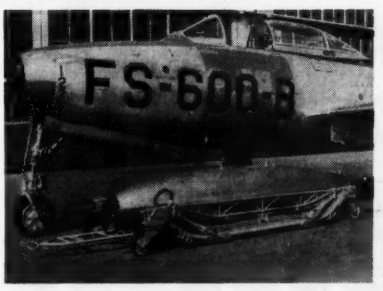
Bassick's "Floating-Hub," in a wide range of sizes (6 to 16 in.) for a wide range of jobs, costs only slightly more than ordinary casters. Write for Catalog 124A. There is a local distributor of industrial supplies handling casters and wheels for every need. Factory engineering assistance readily available. THE BASSICK COMPANY, Bridgeport 2, Conn. *In Canada:* Belleville, Ont.

WEAR ON EQUIPMENT AND CASTERS IS REDUCED

With "Floating-Hub," there is less stress on trucks and dollies because the wheels absorb the bumps. There is less wear on floors because the "Floating-Hub," not the floor, takes the impact. The casters and the equipment last longer.



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Unsolicited, unedited, this quotation is from a letter which accompanied a Truck-Man owner's order for replacement parts:*

"... After *six years* at approximately *10 hours per day* steady running I find it necessary to rebuild the majority of gears, sprockets and other movable parts on one Truck-Man and prepare to do so on another ..."

Another* writes:

"... We are not only well pleased but we do not believe there is a piece of equipment on the market which would serve our requirements any better ... Our normal load would probably run in the neighborhood of 4,000 lbs. ... We now have four Truck-Men ... that run possibly *20 hours every day continuously* ... The cost of operating a Truck-Man is certainly extremely low, as it uses very little gas and oil ... We have had very little maintenance on this equipment."

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head pulleys.

Various remedies for excessive tension are:

1. Reducing the load.
2. Establishing a central loading of the belt, so there is an even feeding of the material to the carrying surface.
3. Removing conditions that increase resistance, such as poorly-lubricated idlers, worn idlers and obstruction of idlers by spilled material.
4. Reducing the take-up and applying only the amount necessary to operate the drive without slippage and to keep the sag between idlers to a minimum. Long-centered conveyors should be equipped with automatic gravity take-ups to permit the belt to adjust itself to changes in length caused by changes in the load or from stretch or shrinkage due to moisture.
5. Increasing the belt wrap around the drive pulley with a snub pulley or a tandem or dual motor drive.

Wear At Loading Points

Most of the wear on a conveyor belt occurs at loading points, and the amount of wear depends on 1) the direction of feed relative to belt movement, 2) speed of belt and material carried and 3) the impact of lumps on the belt.

Load Direction. If the load is fed to the belt at an angle to the direction of belt travel, the abrasive wear is increased. Furthermore, the lateral force imparted by the material being loaded may cause the belt to climb the idlers, resulting in damage to the belt edge. The loading chute should be located so that the material leaves it while moving in the same direction as the belt.

Load and Belt Speed. When a slow-moving load strikes a relatively fast-moving belt, a slipping action between the load and belt occurs at the moment of impact. Since abrasive wear is thus caused, is is recommended that the material travels at belt speed when it leaves the chute. Lower belt speed plus fuller loading is one way to prolong belt life. At higher speeds, a larger percentage of thinly-spread load touches the belt, and abrasive wear is greater than when the same

quantity is carried on a fully-loaded belt at slower speed.

Falling Lumps. Heavy, sharp, jagged lumps which drop directly against the belt not only cause a large percentage of abrasive wear but are also responsible for cuts, gouges and fabric breaks. Wear from falling lumps can be reduced with the following methods:

1. Use of a loading arrangement in which fine material falls on the belt first to act as a cushion for larger lumps, such as a screen or series of openings in the chute some distance from the discharge edge. Fine particles will fall through the openings while larger lumps travel to the edge of the chute before dropping on belt. Similarly, the mouth of the chute may be notched to allow fine materials to drop on the belt first.
2. Use of jingle bars. If the chute discharges three or four feet above the belt, or is so steep that lumps fall with considerable velocity, sheet-iron or steel baffles or jingle bars can be suspended over the chute to slow lump movement. The bars swing from individual hinges at the top, and their weight and number should not be so great as to slow up the feed excessively and choke the chute.
3. Reducing the chute angle. Chute angles should be kept low enough to prevent lumps from bouncing excessively after they land on the belt. A low chute angle, combined with proper direction and loading speed, causes lumps to strike the belt at a grazing angle and induce less impact damage than when lumps strike more squarely. However, chute angles should not be so low as to cause the material to clog the chute.
4. Use of a feeder belt. A short conveyor belt of heavy construction may be used as an intermediate step between the loading chute and the main belt. The feeder belt will absorb most of the wear resulting from loading impact, and can be replaced at a small cost compared to the cost of the main belt.
5. Use of a pad belt. A short auxiliary belt may be installed under the main belt at the loading point

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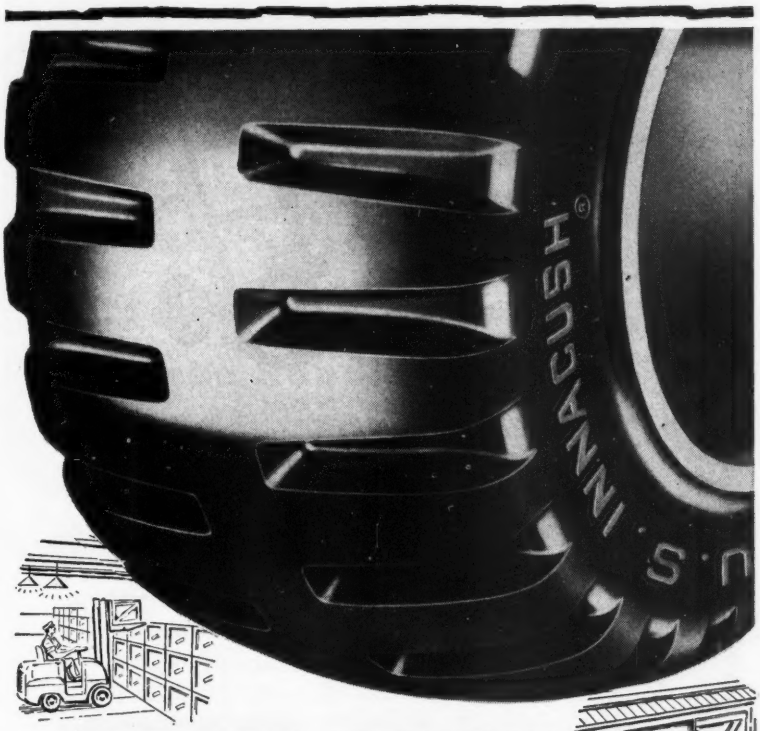

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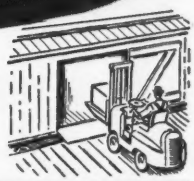

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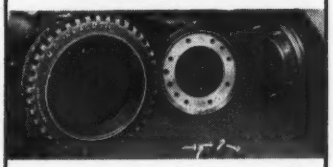

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in such a way that two thicknesses of belting absorb the load impact. The pad belt has its own anti-friction bearing terminal pulleys and runs over two or three of the main belt's troughing idlers. It is moved by friction between it and the main belt, and should have an independent take-up adjustment.

6. Proper arrangement of idlers at the loading point. Heavy, large-sized material which discharges directly over an idler or pulley subjects the belt to a severe pounding. If it is impossible to avoid having idlers located directly under the loading point, damage to the belt can be minimized by special cushioning devices, such as impact carriers.

Harmful Exposures

Light. Rubber tends to crack during prolonged exposure to sunlight, especially when under tension. While rubber compounds include chemicals that counteract light action, there is nothing to overcome it completely. As a general rule, all forms of rubber belting should be protected from direct sunlight as much as possible, especially in dry climates and at high altitudes where there is little atmospheric moisture to filter out ultra-violet rays.

Heat. Special belts for handling hot materials will withstand heat up to 225 degrees F. for fine materials and up to 250 degrees F. for coarse-lump materials when operating under normal atmospheric conditions and where air circulation is good. In closed chambers, temperatures should not exceed 200 degrees F. Any temperature above 100 degrees F. will shorten the life of an *ordinary* rubber belt.

Cold. Low temperatures are normally practically harmless, but rubber compounds tend to lose flexing and elongation properties when cold. Accumulations of ice can result in serious damage if permitted to form lumps on the belt surface, particularly on the pulley side. Pulleys and idlers should be cleaned of ice before starting the conveyor.

Moisture. Excessive moisture will eventually penetrate to the fabric and cause it to shrink. Belt shrinkage is not harmful when an automatic take-up is used or when take-up tension is

eased by hand to compensate for the shrinkage. Acid water which penetrates breaks in a belt cover often seriously damages the fabric reinforcement before it is detected.

Mildew. The growth of mildew in a fabric belt carcass causes considerable damage. Whenever moisture conditions are severe, belting with fabric that has been impregnated with mildew-resisting chemicals should be used. Belt covers should be kept intact by frequent inspection and repair to keep air sealed off from the fabric, since mildew does not flourish without oxygen. The rubber compounds in belts are not harmed by mildew.

Oil. Oil is absorbed by rubber, eventually causing it to deteriorate. Special oil-resisting belts should be used for service where oil is present.

Electric Welding. Ozone generated by ultraviolet light from electric-arc welding can speed the normal aging rate of rubber through oxidation. When near welding operations, the belt should be covered with a tarpaulin or other opaque material.

Damage-Preventing Devices

Lumps of material, even those as small as 1", can seriously damage the fabric carcass of a conveyor belt if they lodge between the belt and pulley. Moist material which cakes on a pulley surface can build up to a size large enough to cause damage. Furthermore, the pressure that can develop at such a point is tremendous, and the tension there can be increased considerably beyond the calculated belt working stress. Here are some devices which may be installed to clean belts and to prevent damage from lumps:

1. Scraper Bar. Lumps can be removed by a rubber-bladed scraper bar which is set at an angle to the belt, and in light but firm contact with its surface. It should be strong enough to withstand lump impact and secured so that it cannot come loose. A scraper bar mounted to bear against a snub pulley or tripper pulley is sometimes installed to remove caked material.
2. Water Sprays. If scrapers are not entirely effective in removing caked material from the pulley side of a belt, water sprays may be directed against the belt surface. Spray jets which are mounted to direct water forcibly against the belt should be set at an angle that causes the water to exert a prying action on the caked material. Following the water spray, the belt should be wiped with a series of rubber scraper blades, set at an angle to discharge the water and remove solids into troughs.
3. Decking. Wood or metal decking may be installed over the entire return side of the belt. This platform will catch any lumps that fall from the load, preventing them from getting between belt and pulleys. The decking should be cleaned frequently to prevent accumulations that may interfere with idler movement.
4. Hopper Devices. Belt damage may be caused by material which overflows from clogged hoppers. Hoppers should be equipped with automatic cut-off switches which stop the conveyor system when hoppers become clogged. These switches may be of the electric-eye or contact-relay type.

(Turn the page please)

Cesco Tote Boxes

...Cut Handling Costs

...Make Handling Easier

SPECIAL CESCO FEATURES

- **Lightweight**
- **Self-Stacking**
- **Quieter Handling**

. . . ruggedly constructed of hardwoods . . . steel reinforced (specially coated steel to prevent rust) . . . riveted for maximum rigidity.

An added Cesco feature . . .

CESCOAT

A new wood preserving process . . . waterproofs . . . greaseproofs . . . is acid resistant

OTHER CESCO PRODUCTS

- **Wire Baskets**
- **Tote Trays**
- **Special Pallets**

CESCO'S 3 STANDARD BOXES

(Prices Net)

Lots of	No. 1	No. 2	No. 3
2000	$1.80	$2.05	$2.20
1000-1999	1.82	2.07	2.22
500-999	1.84	2.09	2.24
250-499	1.89	2.14	2.29
100-249	1.94	2.19	2.34

No. 1 size — (I.D.) — 14⅞" x 11¾" x 9"
No. 2 size — (I.D.) — 18" x 11¾" x 9"
No. 3 size — (I.D.) — 20" x 11¾" x 9"

WRITE TODAY FOR FURTHER INFORMATION

CESCO CONTAINER CO.

General Offices: 475 Fifth Ave., New York 17, N.Y. • Phone MU. 5-4961

Factory: Northampton, Mass.

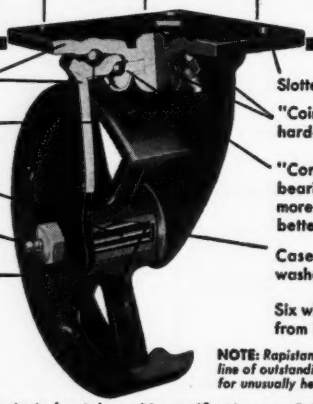
Circle No. 56 on Reader Service Card for more information

BETTER because they are BUILT to be better

You get more for your money with Rapistan Cold-Forged Industrial Casters because they are built to give longer, better service than any other caster of comparable price today.

HERE'S PROOF!

MAKE THESE COMPARISONS YOURSELF	RAPISTAN Cold-Forged Series 40	CASTER A	CASTER B	CASTER C	CASTER D
		Letters represent leading makes of stamped steel casters.			
Method of construction	Cold-Forged	Stamped	Stamped	Stamped	Stamped
Thickness of top plate	1/4"	3/16"	3/16"	3/16"	3/16"
Thickness of caster legs	3/16"	1/8"	1/8"	1/8"	1/8"
Number of raceways—rows of ball bearings	2	2	2	2	2
Smoothness of raceways	.0007"	.0023"	.0030"	.0016"	.0017"
		Figures represent degrees of roughness measured to .0001"			
Ball-bearing surface contacting top plate raceway	.120"	.005"	.030"	.030"	.005"
Ball-bearing surface contacting yoke raceway	.100"	.070"	.030"	.005"	.005"
Protection between wheel-hub and yoke leg	Case hardened, thrust washer	None	None	None	None
Shape of bolt hole for use with previous spacings	Slotted for flexibility	Round	Round	Round	Round



Extra-thick top plate and yoke legs

Two full rows of ball bearings

Hyatt-type wheel bearings

Zerk lube fittings

Hardened outer raceway for wheel bearings

Slotted bolt holes

"Coined" raceways... harder and smoother

"Contour Contact" of bearings on raceways... more surface contact for better load distribution

Case hardened thrust washer

Six wheel types... sizes from 3½" to 8"

NOTE: *Rapistan also makes a complete line of outstanding steel forged casters for unusually heavy work.*

FOR YOU... Illustrated catalog with specifications on Cold-Forged casters and information on our complete line of casters and hand trucks. Write today.

Rapistan®

FASTEST GROWING NAME IN CASTERS

The RAPIDS-STANDARD CO., Inc., 762 Rapistan Bldg., Grand Rapids, Michigan

Circle No. 57 on Reader Service Card for more information

5. Magnetic Separators. Separators will reduce belt damage caused by sharp metal pieces which may find their way into the material being conveyed. There are several types of magnetic separators, one of them being a head pulley in which powerful permanent magnets are built. When material passes over the head pulley, the magnets hold stray pieces of iron and steel against the belt after the rest of the material has dropped off. A divider under the pulley is placed so that the load falls on one side and the scrap metal on the other.

The installation of one or more of these damage-preventing devices is not, in itself, a complete safeguard against damage from spilled material. These devices should be properly maintained so they will operate efficiently. Furthermore, the conveyor system itself should be inspected periodically and any spilled or accumulated material should be cleaned away.

Good housekeeping practices are especially important around loading points, where the accumulation of spillage can create a major belting and equipment hazard. Naturally, manual clean-up operations should not be done while the conveyor is in motion.

A final reminder if you're now using, or contemplating the use of rubber conveyor belting: First of all, select the right belt for the job you want it to do; then, take care of it properly —and you'll find that the investment you made in time and money will be more than repaid with years of dependable service.

The data in this article was prepared with the cooperation of Edgar T. Gregory and Eugene R. Traxler of the B. F. Goodrich Company, Akron, Ohio.

Our thanks also to the following firms for their cooperation: Boston Woven Hose & Rubber Co., Continental Gin Co., The Goodyear Tire & Rubber Co., Hewitt-Robins Inc., Link Belt Co., Quaker Rubber Corp., Stephens-Adamson Mfg. Co., Thermoid Co., United States Rubber Co.

Did you see Part I of this article in the March issue? It detailed types of rubber belting, construction and selection.

What's NEW in useful Free literature

The publications featured on these pages were written by experts. They are FREE publications. To obtain them use the postcard bound into this issue.

Photographic proof that Parker industrial floor sweepers can cut sweeping costs is contained in literature now available from Parker Sweeper Co. Three models are illustrated and described with recommendations for specific uses for each. Complete specifications are given.

Circle No. 157 on Reader Service Card for more information

No matter what your handling problem, there's a Rol-Away truck designed to make the job easier. In a new folder offered by the Rol-Away Truck Co., nine models of this special castered truck are shown. Types are shown for handling sheet metal, pipe, plywood, plate glass, tubing, for stock picking and for several other applications.

Circle No. 158 on Reader Service Card for more information

A five-ft. power driven fork lift attachment has been introduced by the Kwik-Mix Co. for its Moto-Bug. Descriptive literature and detailed specifications tell about it. Standard forks are 20 in. long and adjust to any required width up to a maximum 33 in. Capacity rating is 1000 lb. at 15 in. load center.

Circle No. 159 on Reader Service Card for more information

Information on the uses of stitched canvas belting is provided in a new belting catalog issued by the Belting Division of C. R. Daniels, Inc. New treatments and techniques for prolonging the life and strength of stitched canvas conveyor and elevator belting are described. Also given are complete details for ordering, installing and maintaining eight specific types of belt, including several new belts for handling hot materials.

Circle No. 160 on Reader Service Card for more information

The use of barrier materials in packaging for the military is the subject of a booklet published by the Dobeckmun Co. The booklet is divided into three sections covering: 1. The meaning of governmental symbols, descriptions of several typical packaging operations; 2. A listing and specifications of Dobeckmun military barrier materials, including physical properties; 3. An explanation of superior qualities and versatility of this company's barrier materials.

Circle No. 161 on Reader Service Card for more information

An 8-page bulletin, picturing and describing a machine which automatically end nails lids on boxes of mixed sizes is available from Food Machinery & Chemical Corp. The Lidder automatically adjusts its nailing mechanism to any size box, from a minimum of 6″x6″x15″ to a maximum of 18″x24″x50″, end-nailing lids at the rate of 400 to 600 boxes of mixed sizes per hour.

Circle No. 162 on Reader Service Card for more information

The Alexander Elevator sill is said to provide easy, safe, smooth trucking surface between elevator and building floors, and to protect elevator, doors and floors. It works like a drawbridge to compensate for differences in floor levels, thus speeding material handling and elevator service, and eliminating chances for accidents and spilling of loads. It is described in literature available from Alexander Sill Co.

Circle No. 163 on Reader Service Card for more information

Are you looking for an easier way to handle appliances? A catalog page from Nutting Truck & Caster Co. tells about Model 1039 Appliance Truck. Some of the features cited include: flared out handle to clear tall loads and provide good leverage; solid rubber wheels with cushion tread and Oilite bearings; light weight of only 45 lb.

Circle No. 164 on Reader Service Card for more information

The TractoLift, a heavy duty fork truck is the subject of an eight-page bulletin of the Tracto-Lift Co. It is an all purpose tractor type truck which can be used in even the roughest yard because of its large pnuematic tires. Complete specifications are given, and numerous photographs are used showing the truck in many different types of applications.

Circle No. 165 on Reader Service Card for more information

Selection of the right bag closing machine for any job is made easier by bulletin 200 of Union Special Machine Co. The 16-page booklet contains a tabulated check-list which fits type of bag, capacity and other factors to the correct machine. Addresses of all the Union Special Machine Co. sales service organizations in the United States and throughout the world are also given for your use.

Circle No. 166 on Reader Service Card for more information

Turn The Page Please

"Containerboard—How is it Made? And From What?" is the title of the lead article in this months issue of Weyerhaeuser News. A total of 51 typical products shipped in containerboard cartons are listed as part of the article. "Less Bounce to the Ounce... with Tufflex Cargo-Pak!" is the title of another article dealing with the use of wood fibre cushioning materials. The publication has numerous other interesting and valuable articles. You can get on the mailing list.

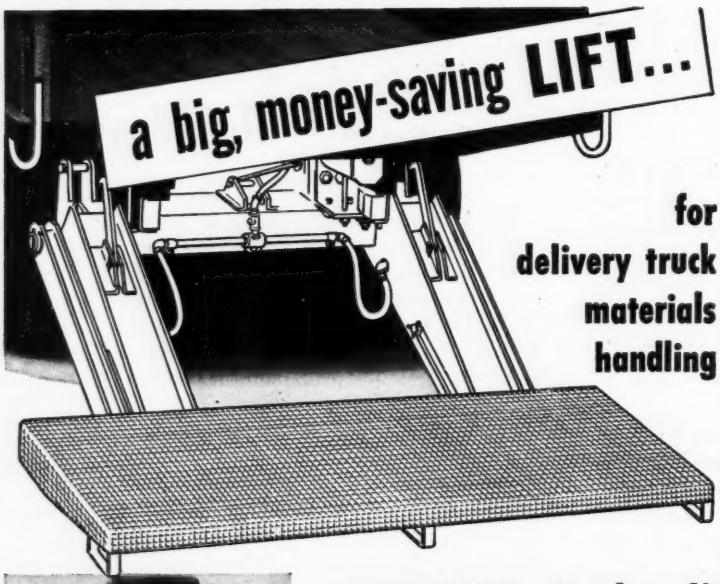
Circle No. 167 on Reader Service Card

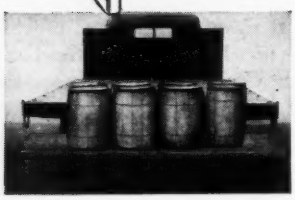
A complete line of parts boxes is described and illustrated in Bulletin No. 500 of Brummeler Steel Products Corp. Several types covered include a corrugated box permitting four-way entry with a Fork truck, a drop door box equipped with crane lugs, several types of hoppers, and a heavy-duty foundry box.

Circle No. 168 on Reader Service Card

Tankdozers to fit into the Armed forces high-speed tractor and tank program have been announced by Gar Wood Industries' Findlay Division. Models can be made available for every type of tank and high-speed military tractor. Circulars describing the tank dozer are available as a guide and ready- reference for those responsible for procuring field equipment for the armed forces.

Circle No. 169 on Reader Service Card





The Hercules Load-N-Gate lifts, lowers or holds stationary loads with effortless ease.

HERCULES Hydraulic Load-N-Gate

Whatever the load—crates, kegs, drums, boxes—you can get it on the truck and off faster, safer and at less cost with a powerful, hydraulically operated Hercules Load-N-Gate. Easily installed on any standard size truck, the Load-N-Gate will pay for itself in a short time in eliminating costly, time-consuming and dangerous loading and unloading by hand. Mail the coupon below *now* for free literature.

PLUS-PROFIT FEATURES

- Safety-tread, non-skid platform
- Exclusive power in both arms handles off-center loads without strain
- Single lever control operated at rear from either side of platform
- Extends only 4½" below chassis frame

Please send me literature on the Hercules Hydraulic Load-N-Gate

HERCULES STEEL PRODUCTS CORPORATION, GALION, OHIO
Dept. 408

NAME_____ TITLE_____

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CITY_____ STATE_____

Circle No. 58 on Reader Service Card for more information

Fundamental principles, and theory of operation of the Hobart Automatic Battery Charger is contained in a folder offered by the Motor Generator Corp. All you do is set it and forget it. When the charging cycle is completed, it shuts off automatically. Several typical installations are shown and described.

Circle No. 170 on Reader Service Card

A preview of the latest issue of "The Lever", Lewis-Shepard's external house magazine, reveals that the emphasis is on pictures—pictures that speak much louder than words in describing the many applications of Lewis-Shepard equipment. The magazine includes action shots of this company's equipment in many different industries.

Circle No. 171 on Reader Service Card

A 12-page folder published by Bowser, Inc. describes construction, operation, flexibility and wide application of a system for accurately blending two or more liquids in increments as low as 1/20%. It is called the Exacto Blending System. Sketches show simplicity and compactness as well as various types of installations where these systems are in use.

Circle No. 172 on Reader Service Card

Economies of belt conveying are yours when you use a Lippmann true belt type Hopper car unloader. Bulletin 1530 tells about this unloader which has a rated capacity up to 300 tons of coal per hour. Details of construction are revealed and specifications for two types of unloaders are given.

Circle No. 173 on Reader Service Card

A new catalog published by Macwhyte Co. lists wire rope assemblies for machine parts and operating devices, and gives detailed specifications for wire rope with fittings permanently attached. Assemblies are used for operating controls, as a part of machinery and equipment, and for slings and hoists. "How to order", instructions are also given.

Circle No. 174 on Reader Service Card

From receiving to shipping, there is a Lewis container designed to help solve your handling problems. Described in an eight-page booklet published by the G. B. Lewis Co. are: a stacking box, a skid box, a box truck, a folding box, and a masonite box. The literature shows how all the containers are reinforced and built for reliable performance.

Circle No. 175 on Reader Service Card

Space magazine, published by the Hyster Co. will be sent to you if you are interested in information packed articles about this company, its products and its operations. A glance at the table of contents of the latest issue reveals items about Grand Coulee Dam, faster freight handling, automotive handling, and a pictorial coverage of Hyster open house tours recently held.

Circle No. 176 on Reader Service Card

Seven places in your plant where the Portelvator can save money are pictured in folder P-152 of The Hamilton Tool Co. It can save you money in traffic control, by cutting out many extra trips to and from machines, it can save time and labor in material handling, it can eliminate unsafe conditions due to need for lifting heavy items, it can make maintenance easier, it can help reduce machine down time, it can make storage more compact and easier, and it can make many assembly operations simpler. You will want to know more about this lifting device.

Circle No. 177 on Reader Service Card

A four-page two-color bulletin on the continuous sampling monitor—a new divice to simplify quality control—has been released by General Electric Co. Among the advantages claimed for the monitor are: maintains average outgoing quality level; eliminates 100% inspection; reduces inspection time; speeds production. The booklet contains photographs and diagrams of the equipment and explains the continuous sampling monitor's operation, construction and range.

Circle No. 178 on Reader Service Card

The Lamson Corp. has available a 16 mm. sound movie on its new automatic pallet loader. The 15-min. film, "The Automatic Pallet Loader" gives overall and close-up views of pallet loaders in operation. It also pictures fork-truck operations during automatic pallet loading.

Circle No. 179 on Reader Service Card

A simplified engineering design makes the Penco Steel Truck Loading Ramp easily adaptable in speeding up

DESIGNED For YOU!
"A Model and Size for Every Job"
LANSING
PLATFORM TRUCKS
LANSING SPARTAN
MEDIUM LOADS
Lansing's Spartan (illustrated above) and Reynolds have been known for generations as quality platform trucks that are built to last. Available in several sizes with superstructures built to your specifications.
LIGHT LOADS
The Lansing Easy-Running truck illustrated is ideal for stores, institutions and some warehouses. Its light weight, low cost and easy maneuverability combine to make it tops in its field. Available with either double or single end racks, or with special superstructures.
HEAVY LOADS
Lansing Industrial Trailers that have been in service for over 30 years are still going strong. New Model 895 illustrated is designed to move heavy loads at relatively high speeds.
SPECIAL LOADS
Consult Lansing Company engineers if you have a problem in handling special materials. The Bar Iron truck illustrated is one example of the many special designs created through over 70 years of experience.
See Your Distributor or Write for Catalog.
LANSING CO.
LANCO MATERIAL HANDLING EQUIPMENT
LANSING, MICHIGAN
Warehouses in 7 Principal Cities.
Since 1881
HAND TRUCKS
PLATFORM TRUCKS
TRAILERS
LIFT JACK SYSTEMS
BARROWS
Circle No. 59 on Reader Service Card for more information

truck loading and unloading operations. Said to be easily placed in position, removed and transported by one-man operation, the ramp accommodates trucks that are either higher or lower than the dock level. A simplified design "ramp stop" holds the ramp securely in position. Described in a catalog page just released, the ramp is sturdily made of all-welded construction, and is crowned to compensate for height differences.

Circle No. 180 on Reader Service Card

A wealth of information on material handling and wire stitching techniques is contained in the latest issue of Confab, Acme Steel Company's new quarterly magazine. One of the case histories featured is the story of how a box shook manufacturer cut dunnage to the bone by devising a pallet-less pallet load. Another article describes the integrated material handling program set up at a major pharmaceutical plant. You will want to get on the mailing list for this publication.

Circle No. 181 on Reader Service Card

BE PREPARED { *To increase production* / *To lower costs*

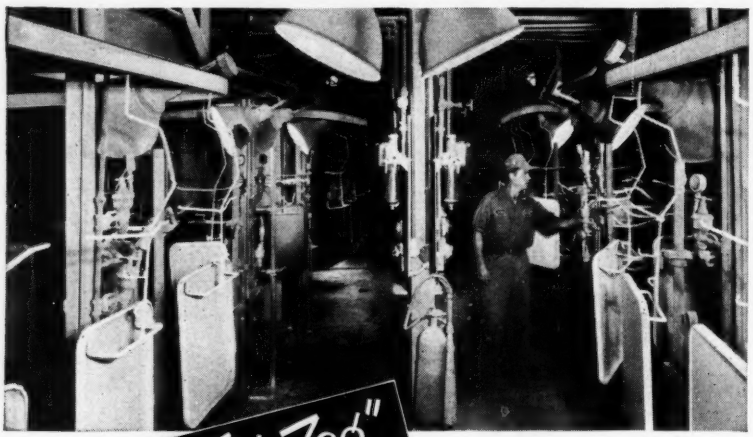


Photo courtesy Hamilton Mfg. Corp.

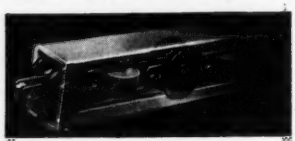
with R-W "Zig-Zag"® Continuous Power Conveyor

Are you prepared to get the maximum efficiency possible from your production line? Or are you face to face with a profit-eating handling bottleneck? Well, here's the answer to your problem—Richards-Wilcox ZIG-ZAG Continuous Power Conveyor.

ZIG-ZAG Continuous Power Conveyors are a patented and exclusive engineering achievement of Richards-Wilcox. You'll find them constantly at work in every type of industry —boosting production, lowering costs, solving man-power problems and raising production line efficiency.

ZIG-ZAG Conveyor Systems are remarkable for their versatility and adaptability. Their unique construction features make them quickly, easily and safely convertible to handling materials in almost any industry. Each unit is engineered to fit perfectly into existing layout and conditions.

Tremendous savings in manpower costs and time pay for the installation often in less than a year's time. See how you can bring bigger profits, maximum efficiency to your production line. Check up on R-W ZIG-ZAG Continuous Power Conveyors with your nearest dealer today.



Engineered for Economy and Flexibility

- Horizontal and vertical units alternate in a continuous chain traveling through special steel tubing.
- Complete flexibility for installation in any plant. Easily installed, easily changeable to conform to plant alterations.
- SAFE—all moving parts are fully enclosed.
- Low first costs. Low Power Factor.
- Standard horizontal or vertical curves —two-foot radius.

For complete details, or a prompt engineering consultation without any obligation, write our nearest office today.

Richards-Wilcox Mfg. Co.
"A HANGER FOR ANY DOOR THAT SLIDES"
AURORA, ILLINOIS, U.S.A. *Branches in all principal cities*
SLIDING DOOR HANGERS & TRACK • FIRE DOORS & FIXTURES • GARAGE DOORS & EQUIPMENT
INDUSTRIAL CONVEYORS & CRANES • SCHOOL WARDROBES & PARTITIONS

1880 RICHARDS WILCOX R-W AURORA 1952
Reg. U. S. Pat. Off.
OVER 72 YEARS

Circle No. 60 on Reader Service Card for more information

Hoffman Co. tells you about substantial savings in money, time and lower replacement costs, possible when you use Hoffman Kreider Dryer baskets. The information, contained in literature offered free to you also gives complete specifications and prices for five different types and sizes of baskets.

Circle No. 182 on Reader Service Card

A new floor patching material called Permamix, claimed to incorporate many new features is decribed in bulletin "Traffic Never Stops". Ease of application is cited; just follow three steps — first clean hole to be patched, spread primer supplied in drum, second fill in with the patching material, and third, tamp solidly and dust with cement or floor dust. Resume traffic at once. The bulletin is available from Permamix Corporation.

Circle No. 183 on Reader Service Card

Bulletin 10-210 of the Electric Products Co. describes and illustrates the full line of Type S single-circuit motor-generator battery chargers for industrial batteries. Compact and completely self-contained, these chargers are said to require no manual attention during the charge. A simplified listing makes easy the selection of the right charger for any popular size truck battery.

Circle No. 184 on Reader Service Card

"How to Pack War Materials in Corrugated Shipping Boxes" — booklet ♯14 in Hinde & Dauch's Little Packaging Library is now available. Sturdy packaging is imperative for equipment shipped to the front. This booklet explains how specific problems were met and solved by contractors and sub-contractors with the aid of Hinde & Dauch engineers.

Circle No. 185 on Reader Service Card

Advantages offered by Towsley semi-live skids are discussed in bulletin 51 of Towsley Trucks, Inc. These skids automatically introduce a system

whereby material is constantly kept mobile in any operation or department without reloading and readjusting. The Kum-A-Long Jack for use with Towsley skids is also covered in the booklet.

Circle No. 186 on Reader Service Card

Equipment for applying paper labels completely around cylindrical containers is the subject of a technical service bulletin published by Paisley Products Inc. Sections in the literature deal with food container labeling, chemical product container labeling, government specification container labeling and a description of labeling methods, spot labeling and wrap-around labeling.

Circle No. 187 on Reader Service Card

The Standard Bantam Tractor and attachments available for it is described in a broadside available from Standard Mfg. & Sales Co., Length of the tractor is 50 in., width across the rear wheels—30 in., Height to top of hood—26¾ in., and weight is 210 lb. Its engine is a Briggs & Stratton No. 9 F.B.—3 horse-power. Wherever a full size tractor would be too large, this bantam might prove useful.

Circle No. 188 on Reader Service Card

What is a Carter Black Velvet Conveyor? Carter Industries answers that question in a four-page folder recently published. The rollers of the conveyor are surface treated to make them corrosion-free and are integrally lubricated to give long trouble free life. Specifications are given on a roller type conveyor and a wheel type.

Circle No. 189 on Reader Service Card

A general description of the Hydrion Battery-Water Unit for conversion of ordinary tap water to pure mineral-free water for battery maintenance purposes is included in a folder available from A. E. Tomkin & Co. Included are detailed specifications and performance data for both a standard model and a heavy-duty model.

Circle No. 190 on Reader Service Card

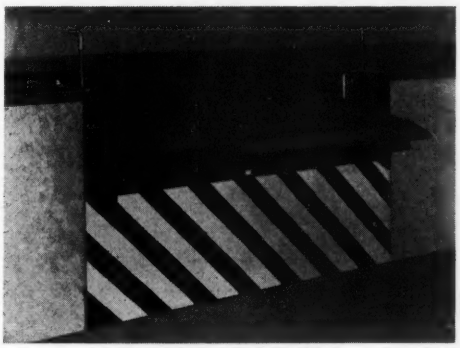
Coburn overhead monorail can be arranged to run directly over the machines it serves, leaving valuable floor space clear for trucking. Made in seven sizes, the track covers a wide range of load capacities described in Coburn's latest catalog. The track is designed for use with manually propelled carriers, which may be equipped with either chain hoists or electric hoists. The catalog also illustrates the standard parts available for Coburn track.

Circle No. 191 on Reader Service Card

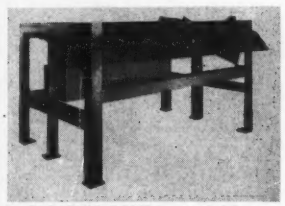
Labor-saving applications of hydraulic pullers and jacks are discussed in a new 8-page bulletin issued by Templeton, Kenly and Company. The bulletin also introduces Simplex Re-Mo-Trol Hydraulic pumps and remote-controlled rams. It shows how these units simplify rigging requirements and improve safety in different pulling, pushing and lifting jobs. Complete specs of Re-Mo-Trol and other equipments are given.

Circle No. 192 on Reader Service Card

CHRISTENSEN'S
the most complete line of loading ramps

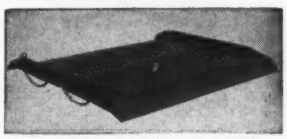


4-WAY HYDRAULIC LOADING RAMP is self-contained, has 4-way movement, up, down, in and out. Two models have 10-ton capacities each.



FLOATING DOCK is operated by a counterbalance. It is an inexpensive, self-contained unit; capacity 15,000 lb.

EASYLOAD TRANSFER PLATES are manually operated, rest flush within the floor when not in use. Four standard sizes with capacities from 3500 to 15,000 lb.



DRIVE-A-PLATES are portable for car loading and unusual truck loading operations. A complete range of sizes and capacities are available.

To Speed Your Truck and Rail Loading and Unloading Operations

Whether your operations call for a permanent loading ramp built into your dock, or a portable, lightweight plate which can be moved around, there is a wide range of models to meet your needs. Our complete line stands ready to match every problem, and every pocketbook too. All models have the same advanced engineering design, built for long life and rough usage. Their low maintenance requirements is another factor that is mighty important to all plants these days.

For complete details on any or all models, write us today.

Wm. Christensen Co., Inc.

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400 SOUTH SHERMAN ST. YORK, PENNSYLVANIA

Circle No. 61 on Reader Service Card for more information

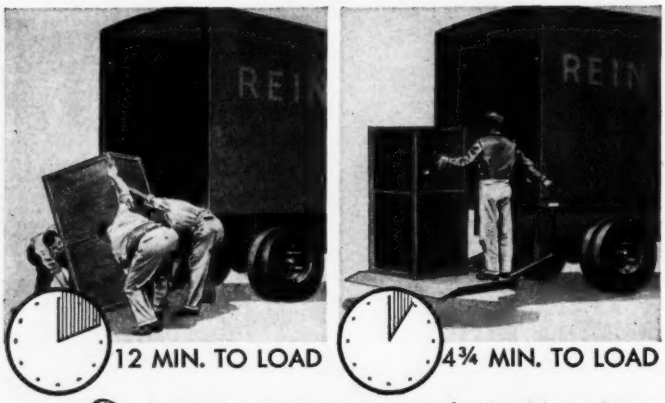
The TelAutograph telescriber, an instrument designed to transmit handwritten communications from one point to another is described in a series of booklets offered by TelAutograph Corp. One of its outstanding applications is in the receiving department where as soon as a shipment is received, the clerk writes to any department waiting for urgently needed parts to report that they are in. In that way, there is no bottleneck, and written messages serve as records of all communications.

Circle No. 239 on Reader Service Card

Six types of pallets mass-produced by Sterling Lumber & Supply Co. are described in a four-page bulletin recently released. There is a double face non-reversible pallet for use with both fork lift and hand pallet trucks; a double face reversible for use with fork trucks only; a 4-way notched stringer type for greater flexibility in loading and unloading; a stevedore pallet; a semi-wing pallet; and a 4-way block leg pallet. Construction details are given.

Circle No. 240 on Reader Service Card

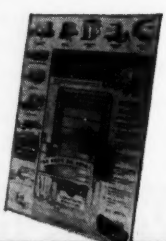
WHICH WOULD YOU SAY IS THE BETTER WAY— TO LOAD YOUR TRUCKS



Loading and unloading can be cut to a *fraction* of the usual time—with less manpower—with Anthony LIFT GATES. Wheel the load on . . . raise it with hydraulic power . . . wheel it into the truck. Daily deliveries are practically doubled with less merchandise damage and fewer personnel accidents. One man can easily handle heavy, bulky loads with a LIFT GATE to do the lifting. Load or unload from curb, dock and ground levels. Available in types, and with power closing, to fit your needs.

A demonstration will show you why LIFT GATES are used in over 123 industries to make *more* deliveries per day with *less* equipment and manpower. There is no obligation.

USE THE LIFT GATE WAY TO MAKE TIME PAY



MODELS FOR ANY TRUCK ½-TON TO HEAVY SEMI-TRAILERS

Write for distributor's name on your company letterhead. Ask for a demonstration or a "MODEL" that shows how to evaluate your need for a LIFT GATE. Address Dept. 2402.

ANTHONY LIFT GATE HYDRAULIC

ANTHONY COMPANY
STREATOR • ILLINOIS

See your nearest distributor or write Dept. 2402.

Circle No. 62 on Reader Service Card for more information

CRANES & SHOVELS . . .

(Continued from page 63)

are made evident by the number of accessories which are available for use with this unit. Some of these accessories include:

1. Clamshell Buckets, for handling bulk materials.
2. Dragline Buckets, for excavating and stripping.
3. Magnets, for handling iron and steel products.
4. Concrete Buckets, for placing concrete.
5. Orange Peel Buckets, for digging holes or shafts.
6. Skips, for lifting materials out of deep excavations.
7. Grabs, for handling pulpwood and mine shoring.
8. Slings, for handling heavy, awkward shapes.
9. Grapples, for handling stacked ties, etc.
10. Tongs, for handling logs, crates, etc.
11. Hairpin Hooks, for handling heavy pipe, coils, etc.
12. Clamps, for handling barrels, drums, boxes, etc.
13. Skull Crackers, (while they do not handle materials, they prepare them for easier, quicker handling).
14. Special Hooks and Accessories, for handling special material or for specific jobs.

The length of the crane boom may be increased for greater working range and reach. The two common methods for increasing boom length are: 1) with boom tip extensions or jibs which are added to the head of the boom either as straight or gooseneck extensions, and 2) by the insertion of intermediate center sections between the top and lower sections of the crane boom.

One of the most important factors in the selection of a lifting crane is the size or lifting capacity. It is best to select a crane with a greater lifting capacity than is expected to be needed, as no machine will last out its expected lifetime when worked continually at full capacity.

Another factor to be considered when selecting a crane is whether loads will be carried by the unit after they are lifted. If they are, these loads should not exceed the crane's capacity

without outriggers on rubber tired units. However, if loads will not be carried, the maximum capacity with the outriggers may be the basis of selection. Manufacturer's tables should be checked when determining the lifting capacity of a crane at a given radius. When using longer booms than those specified, allowances should be made for the additional length.

Travel speeds and maneuverability should be considered if loads are to be carried. Mobile cranes which have more than one speed will provide power in low speed for poor traveling conditions, and afford higher traveling speeds where conditions are good.

Clamshells

Clamshell equipment consists of the common crane boom, a clamshell bucket, a tagline to keep the bucket from spinning or swaying, and hoist drum laggings for the proper line pulls and speeds. The name clamshell comes from the shape and operation of the bucket, which consists of two shell-like halves hinged together at the top.

Clamshells are used to handle bulk materials that are relatively soft, loose or medium hard. They are used where accurate dumping or disposal of materials is required, such as charging bins or building stockpiles. Clamshells can dig or dump materials at, below, or above the level of the machine.

When digging, the bucket first rests on the material with the halves open. As the closing line is reeved in, the bucket closes and digs into the material. While the bucket is closing, its weight helps it to bite into the material.

The combined weight of the clamshell bucket and material handled should not exceed the safe crane lifting capacity of the unit.

In estimating loads, allowances should be made for the heaviest materials and also for any suction in wet materials.

Draglines

Dragline equipment includes the standard crane boom, fairlead to guide the drag cable, hoist drum laggings for proper line pulls and speeds, dragline bucket and cables. The dragline bucket is lowered away from the machine onto the material, and is filled as it is dragged toward the machine.

The dragline is suited to handle soft to medium hard materials at or below ground level. Buckets are available for light, medium and heavy duty, and proper selection depends on the weight of material, necessary operating radius, production required and the capacity of the machine as a crane.

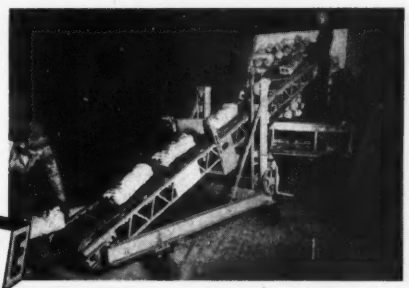
Generally, the combined weight of the bucket and material handled should not exceed the safe crane lifting capacity of the unit. Water content and suction of the material should be considered, and manufacturer's specifications should be followed.

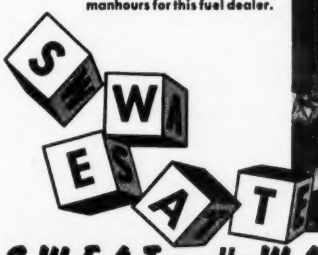
Draglines are especially useful where materials are to be dumped, or the bucket cast, as far from the machine as possible. Materials can usually be dumped further away from the unit than with any other method because of the long, low booms used on draglines. However, hauling units may also be loaded with draglines.

Bearing pressure is an important factor in dragline work. This pressure ranges from about 5 pounds per square

(Turn the page please)

Lippmann Portable Freight Handler saves time and manhours for this fuel dealer.





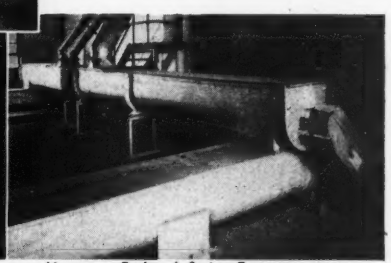
S-W-E-A-T spells W-A-S-T-E in Materials Handling

The *easiest* way to improve cost and production figures is to use *easy* ways to handle and move materials. How many places are there in *your* plant where materials handling is still being done manually or with obsolete equipment?

Whether bags, boxes, barrels, bales, bulk or pieces are involved there's a Lippmann conveyor that will move it faster and cheaper. For Lippmann builds a broad line of conveyors to beat all kinds of handling problems — portable, stationary, belt, roller, gravity, powered, pusher-bar, bar flight, slat, bucket and screw types. Lippmann engineers also have the broad experience so necessary to fit the proper conveyors to each of your problem jobs. You are invited to obtain their recommendations, without obligation. Lippmann Engineering Works, 4629 W. Mitchell St., Milwaukee 14, Wisconsin.

Gravity-Roller, Powered-Roller and Screw Conveyors plus chute make up this complete Lippmann installation.

Lippmann Pusher-Bar Conveyor moves packaged materials between floors for hardware wholesaler.



Lippmann Enclosed Screw Conveyors move hot, noxious, dusty or wet materials — also protect against contamination.

LEW LIPPMANN

CRUSHERS FEEDERS SCREENS CONVEYORS ELEVATORS HOPPERS BINS

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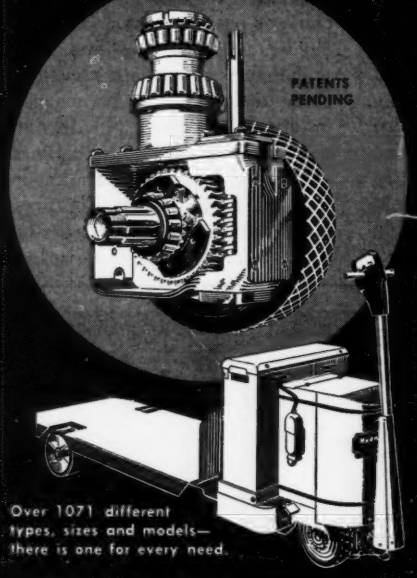
Circle No. 64 on Reader Service Card for more information

outwears chain drives 10 to 1



This sealed gear drive guarantees much longer life for the Hydrolectric. Requires little maintenance . . . and only minimum attention. The sealed Gear Drive in the Hydrolectric Lift Truck is Stuebing engineered to give maximum service life without fuss or bother. This exclusive feature eliminates the main cause of excessive repairs and costly down-time in truck operation. All gears and running parts are sealed in lubricant. It is the widely accepted automotive type differential gear drive.

Over 1071 different types, sizes and models—there is one for every need.

LIFT TRUCKS INC. THE STUEBINGS CINCINNATI

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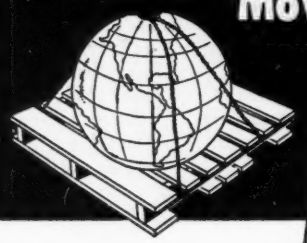
Move The World On Pallets



CORN PRODUCTS REFINING COMPANY

NORTH KANSAS CITY, MO.

January 8, 1952

Mr. Harvey Harrison
Supreme Manufacturing Co.
Bergman, Arkansas

Dear Sir:

In reply to your letter of December 19, in which you inquired about the durability of the hardwood pallets supplied by your company. We started using your pallets about six years ago and have purchased an additional 2000 pallets from you during the past year to keep in step with increased shipping and warehouse facilities.

In our opinion the Supreme Pallet we are using has withstood the wear and tear of our type shipping and warehousing operation very well. While some repairs have been necessary we feel these repairs, for the most part, can be attributed to the normal wear and tear to which all pallets are subjected.

Very truly yours,

CORN PRODUCTS REFINING CO.

J. N. McClain
Staff Ass't.

JNMcC:al

Why be satisfied with less than the best pallets, collapsible boxes and cratings when the best costs no more? OZARK MASTER pallets and boxes are still giving continuous service after 5 or more years of hard usage by some of the largest companies in the U.S. and Canada. If you are not now using OZARK MASTER pallets, can you say this for the pallets you are using?

Five factories to serve you. Samples furnished upon request. Write, wire or call us for quotations and delivery schedules. Over 2,000,000 pallets experience.

SELECT TERRITORIES ARE AVAILABLE TO PROGRESSIVE DEALERS AND DISTRIBUTORS. YOUR INQUIRIES ARE INVITED.

SUPREME MANUFACTURING CO.

BERGMAN, ARKANSAS

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inch with extra wide and long crawlers to 10 or more pounds per square inch for some of the larger machines. When comparing crawler mounting specifications, the actual working weight of the dragline with attachments should be used.

Shovels

Shovel equipment consists of the shovel boom, dipper stick, dipper and the dipper trip mechanism, plus equipment for crowding and retracting the dipper stick. The dipper stick is mounted on a shipper shaft near the middle of the boom, and slides back and forth. The dipper is carried on the end of the stick and may be raised or lowered as the stick is pivoted at any point along its length.

In general, shovels are used to dig or excavate firm or hard materials which must be dumped above or at ground level. These materials may be dumped into hauling units, onto belt conveyors or on spoil banks. For greatest efficiency, the excavation should be large enough to provide sufficient working area for the shovel and enough depth of cut to utilize full productivity.

Factors to be considered when determining the most effective size shovel include:

1. Type of Material. For hard materials, large shovels afford the advantages of increased power, large dipper opening and heavy construction. Where digging is easy, the low investment, mobility and close clearances of smaller machines should be considered.

2. Depth of Bank. When the cuts to be worked increase in depth, the possible advantages of larger machines also increase. However, in shallow cuts, it may be difficult to properly fill the dippers of larger shovels. This, plus frequent move-ups, may give smaller machines an advantage in lower cost-per-yard.

3. Clearances. Where digging or moving must be confined to close quarters, smaller shovels offer certain advantages. Machine clearances vary for different manufacturers, as well as for different machine sizes. Exact data can be obtained from manufacturers' specifications.

4. Mobility. Travel speeds and mobility should be considered when a large amount of moving on the job is required.

Hoes

The hoe may be described as a cross between a dragline and a shovel, as it has some of the characteristics of both. It is so named because its digging action resembles that of the garden hoe, the dipper being on an arm that is pulled toward the machine when digging.

Its front end operating equipment consists of a boom, a dipper stick pivoted at the end of the boom, a dipper, drum laggings and a mast or A-frame to provide proper hoist cable leads.

Because the weight of the boom can be used to force or crowd the dipper into the material, the hoe can dig harder material than the clamshell or dragline. However, its digging depth is limited by the length of the boom and stick.

Trench digging, obviously, is one of the basic and universal uses for the hoe, since it can dig hard materials, be controlled precisely, cut straight side walls and grade the bottom of the excavation. Material may be disposed of by loading into hauling units or by dumping onto spoil banks.

Digging depth and clearances are important factors to be considered in the selection of hoes. In the smaller sizes, cutting width rather than the capacity of the bucket is often the main consideration.

Naturally, the five machines which have been discussed do not include all the modifications which are possible with these units. There is, for instance, the pile driver for driving piles of various types for foundations, sheathing and cofferdam work. However, the five machines do indicate the wide range of possible applications for power cranes and shovels in the material handling field.

NEXT MONTH: Care and Maintenance of Power Cranes and Shovels.

Our thanks to the following companies for their cooperation in the preparation of this survey: American Steel Dredge Co. Inc., Wayne Crane Div.; Baldwin-Lima-Hamilton Corp., Lima-Hamilton Div.; Bucyrus-Erie Co.; The General Excavator Co.; Harnischfeger Corp.; Koehring Co.; Link-Belt Speeder Corp.; The Osgood Co.; Power Crane & Shovel Association; The Thew Shovel Co.; Unit Crane & Shovel Corp.—Ed.

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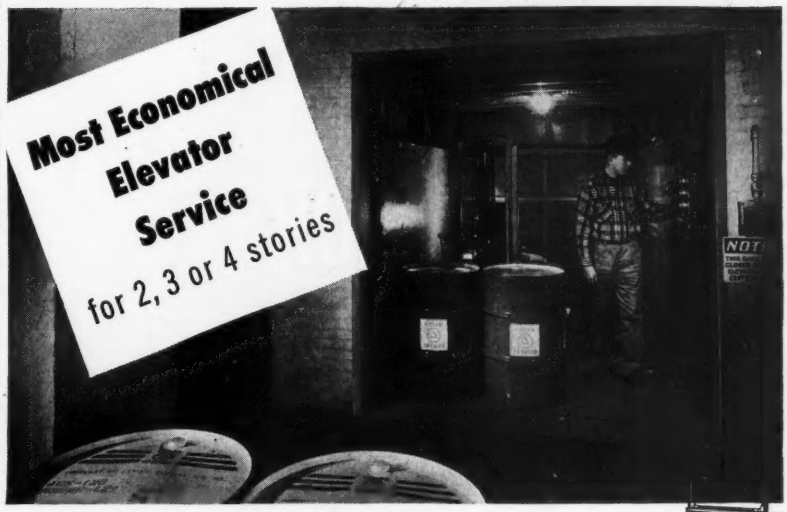
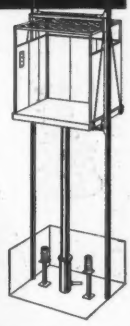


No penthouse or heavy sidewalls!

Oildraulic Elevators are designed for low-cost installation and economical, trouble-free operation. No penthouse or heavy load-bearing shaftway structure needed . . . powerful hydraulic jack supports car and load. Rugged car construction to withstand shocks and jolts of power truck loading. Automatic floor leveling within ¼" guaranteed, regardless of load size or rate of speed. Car sizes, capacities and controls as required.

Over 65,000 Oildraulic Elevators and Lifts are now in use . . . backed by Rotary's coast-to-coast service organization.

For catalog, write Rotary Lift Co., 1140 Kansas, Memphis 2, Tenn.



Rotary OILDRAULIC ELEVATORS

Nutting

THE ONLY MECHANICAL JACK WITHOUT SPRINGS

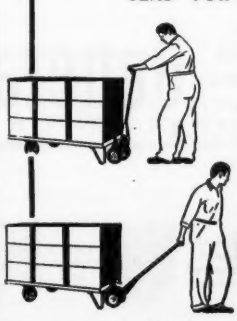
The Nutting Jack is the ONLY jack operated entirely by gravity and leverage. With no springs to break, there is no danger of your whole jack-skid system suddenly being put out of service. It's always dependable.

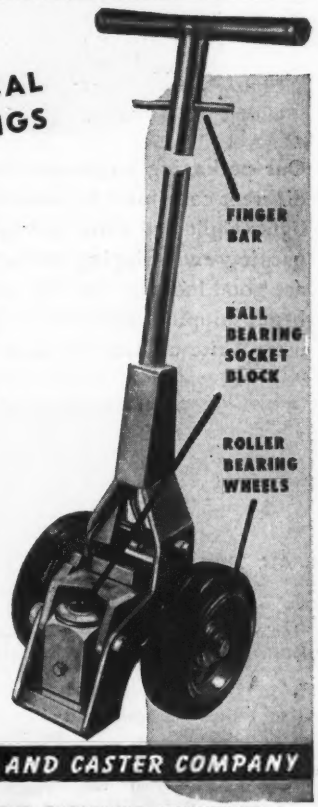
One lift truck and two dead skids cost about the same as TWO NUTTING JACKS AND TWELVE SEMI-LIVE SKIDS. That's one reason why the Nutting Jack and Skid system can be such a money-saver in your plant. Material stored on semi-live skids is made mobile in a hurry. The jack may be coupled to one skid, then uncoupled and coupled to another faster than the time it takes to tell about it.

SEND FOR BULLETIN 48-JS

Look in your classified phone directory for your Nutting representative, or write for Bulletin 48-JS. It will pay you to get all the facts on this superior Nutting Jack-Skid handling system.

Nutting makes everything in floor trucks, wheels, casters.





NUTTING TRUCK AND CASTER COMPANY

1606 DIVISION STREET, FARIBAULT, MINNESOTA

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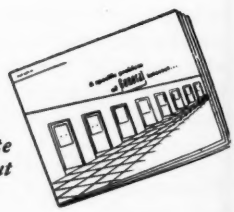
your competition may be MORE than one jump ahead if you make these products: kitchen ranges • water heaters • regulators • refrigerator units • pumps • motors

Our packaging engineers have just designed new and different containers for *each* of these products. They are lightweight and extra strong! They are *designed* to cut packing and shipping costs, to speed production! They are good looking, too! We have experience in designing better shipping containers for practically all types of products. Write us. Get the facts on this important subject.



Get this important booklet. Write today! It's free! It shows how to cut packing and shipping costs.

ALL TYPES OF ENGINEERED SHIPPING CONTAINERS

District Offices and Plants:
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1857 Miner Street,
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PACKAGING and SHIPPING SECTION

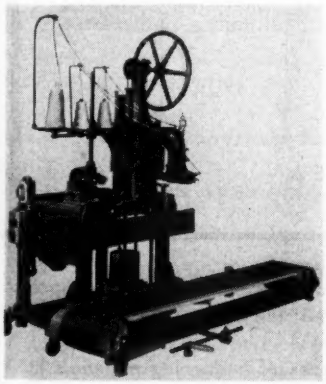
How to Engineer
Package Cushioning 100

12 Ways to Close
Corrugated Cartons 104

What's New in Packaging and Shipping Equipment?

Bag Closing Machine—*Union Special Machine Co.*

This machine manufactured by the Union Special Machine Co. is specially designed for closing medium to large textile or paper bags, using 80600 or 14500 head. Equipped with a 6 ft. conveyor, it is claimed to be a high production machine which can make plain sewed or tape bound closures at the rate of 2,800 100-lb. bags per eight-hr. day.



Circle No. 193 on Reader Service Card for more information

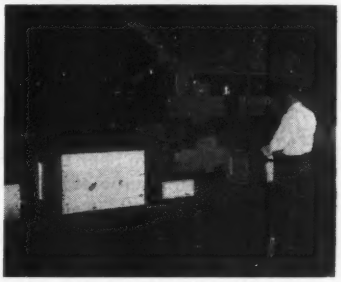
Crinkled Kraft Multi-Wall Bags—*National Waterproof Papers, Inc.*

Bulk shipment of mineral concentrates, numerous chemicals, pharmaceuticals, meat products, fertilizers, farm products, powdered milk, seeds, starch products, and scores of other powdered crystalline and granulated products is reportedly no problem with crinkled kraft multi-wall bags made by National Waterproof Papers, Inc. Made of 2 to 6 plies, they are said to be strong, and easy to handle. Single or laminated sheets of regular or wet strength kraft are used in their construction. All plies are held firmly together with an adhesive compound. Trade name is Tufpak. They can be made in any size up to 36 inches wide, with a maximum of 44 inches for some applications.

Circle No. 194 on Reader Service Card for more information

Adjustable Box Lidder—*Food Machinery & Chemical Corp.*

A machine which automatically end nails lids on boxes of mixed sizes has been developed by engineers of Mood Machinery & Chemical Corp. It adjusts its nailing mechanism to any size box, from a minimum of 6 in. deep, 6 in. wide and 15 in. long, to a maximum of 18 in. deep, 24 in. wide and 50 in. long, end-nailing lids at the rate of 400 to 600 boxes of mixed sizes per hour. Only one operator is required to run the machine.



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(Turn to page 119)

How to Engineer P

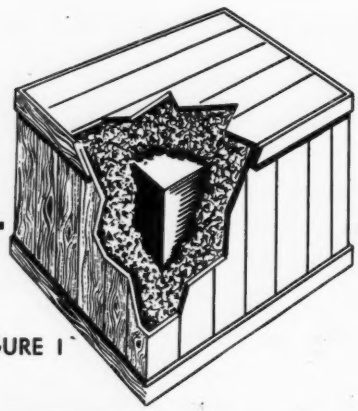

FIGURE 1

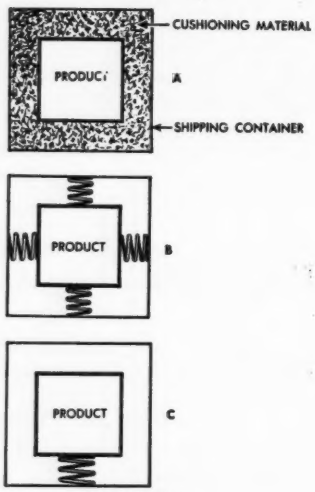

FIGURE 2

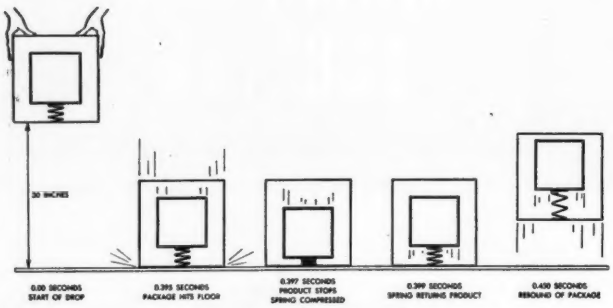

FIGURE 3

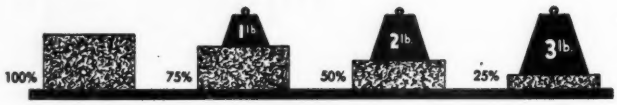

FIGURE 4

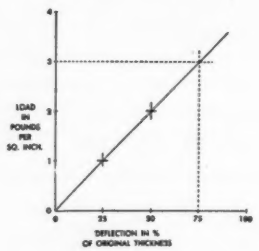

FIGURE 5

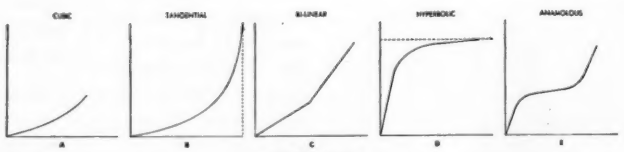

FIGURE 6

FIGURE 1. A typical cushioned package. It consists of three elements: exterior shipping container; cushioning material; product. Product is floated on all sides.

FIGURE 2. Schematic representation of cushioned package in Fig. 1. Springs have been substituted in place of cushioning in B and C for purposes of studying effect of shock on package and contents.

FIGURE 3. Package is dropped from 30-inch height. It hits floor at speed of 8.5 mph. Container stops, but contents continued downward, then rebound, sometimes enough to raise package off floor.

FIGURE 4. Method for determining load-compression characteristics of a cushioning material.

FIGURE 5. Thicknesses resulting from placing weights on cushioning in Figure 4 are converted into percentages of original cushion thickness and plotted on chart against weights.

FIGURE 6. Different types of cushioning materials have different load-compression characteristics. Here are illustrated five types.

FIGURE 7. When load is removed from cushioning, its height is less than when load was applied. Some recovery takes place as time passes, however. Loss of height, called "set" changes dimensions of cushioning, and can result in damage if not compensated for ahead of time.

FIGURE 8. Some of energy is converted into heat by friction or plastic deformation of material when load is applied. Cross hatched area between the two curves represents absorbed energy which cannot be returned.

Package Cushioning

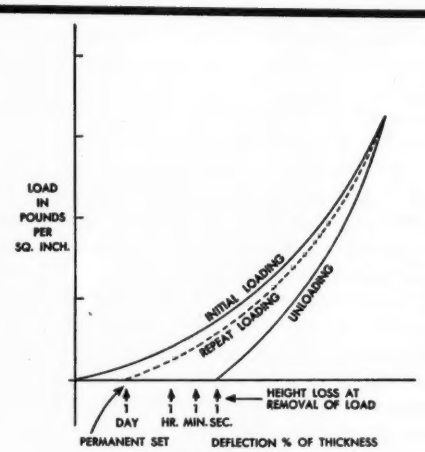

FIGURE 7

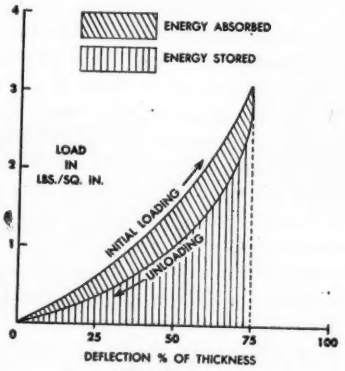

FIGURE 8

By John L. Gretz

Packaging Laboratory Director
Sponge Rubber Products Co.
Shelton, Conn.

Proper packaging is vital everywhere. The products which you make, as excellent as they are when you ship them, can be worthless when they reach your customers if you use poor packaging techniques.

A growing American industry, now producing materials for every variety of package cushioning can give you assistance in protecting your products properly in shipment. The many cushioning materials available, characterized by their ease of application, resiliency, ability to compress and low cost per unit volume, supplement the protection afforded by the container. They include rubberized hair, cellulose wadding, shredded paper, excelsior, sponge rubber, wood felt, hair felt, and corrugated paper. By using proper materials in the right way, you can prevent damage from rough handling and vibration.

The following facts and principles in addition to giving a clear picture of this new field, are designed to give you some of the information you need to design, evaluate and specify the right cushioning package for the job involved.

Here Are Some Basic Cushioning Principles

A cushioned package (Fig. 1) is comprised of three elements: the exterior shipping container, the cushioning material and the product. Figure 2A is a schematic representation of the same container. By substituting springs for the cushioning on each side of the product, the package can

Here's a sample problem using the formulas contained in this article:

Article: Gyroscopic Instrument

Wt = 5.0 lbs.
G-Factor = 30 g's Maximum
Length = 6 inches
Diameter = 8 inches — Area of Bottom = 50 sq. in.

Max. unit load:

$F_m = W \times G_m/A = 5 \times 30/50$
$= 3$ lbs/sq. inch

Deflection at 3 psi is 75% and efficiency is 50% (see figure 5)

Thickness of cushioning required:

$Th = h/G_m \times d_m \times eff.$

$Th = 30/30 \times .75 \times .5 = 2.67$ in.

How to Engineer Your Cushioning

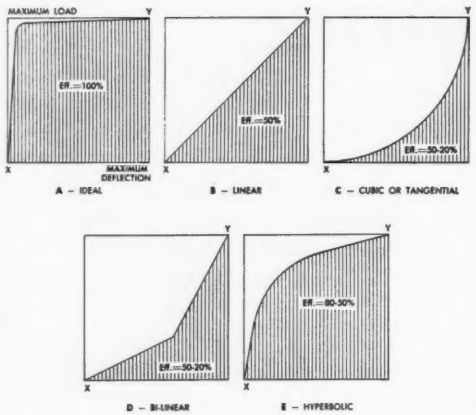

FIGURE 9

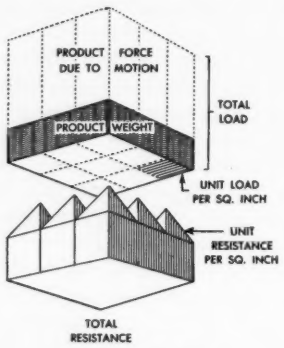

FIGURE 10

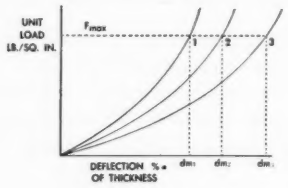

FIGURE 11

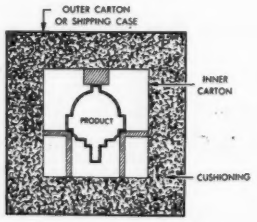

FIGURE 12

FIGURE 9. Charts showing efficiency curves. Ideal curve, A, is not obtainable in material in use today.

FIGURE 10. Schematic demonstration of method for determining proper stiffness cushion for an article.

FIGURE 11. For any given load-deflection curve at maximum calculated load, a certain deflection will result.

FIGURE 12. Spreading the total load over a greater area.

be represented as in 2B or for the purpose of studying the package in one direction only, all the springs may be represented as one as in Figure 2C.

This standardized concept of a package simplifies the solution of the cushioning design.

The packaging engineer has also standardized on the rough handling of packages for test purposes by employing the "accidental" drop of 30 inches, the average height of a man's hands from the floor when carrying a heavy package. When the standardized package of Figure 2 is released, it increases speed of fall uniformly under the pull of gravity. It strikes the floor, at a speed dependent on the drop height (8.5 mph from 30 inches). Then as shown in Figure 3, the container stops but the product, moving also at 8.5 mph, pushes into the cushioning. It continues downward until the resistance of the compressed cushioning is equal to the force of the moving product. At this point, the product, slowed to a stop after expending its energy of motion is returned to its original position by the energy stored in the compressed cushion. Under certain conditions, this stored energy may exceed the total package weight so that the rebounding product lifts the package off the floor. The total rebound forces, however, will never exceed the forces of the first impact.

Reviewing the package drop test from a different viewpoint, the cushion's function is to slow down (decelerate) the product in a few inches of space which is a fraction of the drop height. The initial acceleration was due to the force of earth's gravity, known as one "g", and the deceleration or rate of slowing down must be greater since the space available is much less. This relation may be expressed in terms of work where the work performed in falling is the product weight multiplied by the drop height (W x H) which equals the work done in compressing the cushion (cushion deflection x deflecting force or D x F). The ratio of F/W or H/D is the average deceleration expressed in units of earth's gravity, abbreviated as g's (32.2 ft/sec/sec).

G-factor

Having introduced g's as a unit of acceleration, the term G-factor should also be explained since it is commonly used by package designers. The term G-factor was unique to the aircraft industry until recent years. To explain in a few words, a plane designed for a G-factor of 5 g's was designed to withstand forces or loads on every member equal to 5 times those experienced in normal flight so that a plane in a pull-out maneuver where the deceleration was equal to five times that of gravity or 5 x 32.2 ft/sec/sec/ would survive undamaged. Eventually, Government specifications required aircraft components such as radios, clocks, flight instruments and other accessory gear to operate satisfactorily under these same acceleration conditions and accordingly, G-factors were employed in the design of these and associated equipments.

A similar condition occurs in a package free fall in that the product during its deceleration experiences the same pressures as the cushion which is resisting the downward pressure of the descending product. This load

(Turn to page 112)

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12 Ways to Close Corrugated Cartons

. . . for maximum product protection

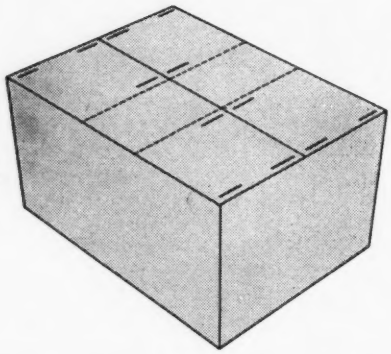


FIGURE 1. Stapling pattern for method using 12 staples.

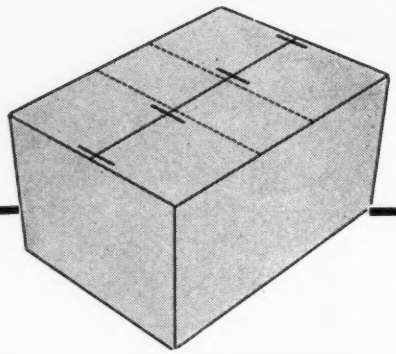


FIGURE 2. Four-staple method recommended for use with large size staples.

Many advantages are to be gained from using correct, proven methods for applying the various types of closure materials available. This survey presents some of the methods recommended by manufacturers for successful application of two general types of materials; tapes and staples. (You can get information for correct strapping procedures from the article, "Six Rules For Strapping Containers", FLOW Nov. 1951.)

Here are four important points to consider:

1. A properly closed box will be able to give your products the maximum protection it was designed to give, whereas incorrect closure can make an excellent container fall far short of its capabilities.
2. Correct methods result in savings in materials. There is a point where strength of closure stops increasing and waste begins with the addition of more closure material.
3. Time savings can be considerable if shipping clerks know and follow best procedures.
4. A correctly closed box will have a neat, business-like

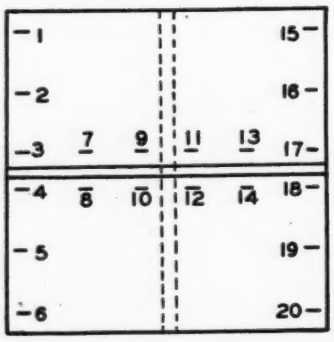


FIGURE 3. Stapling pattern for center special box with flaps meeting in center.

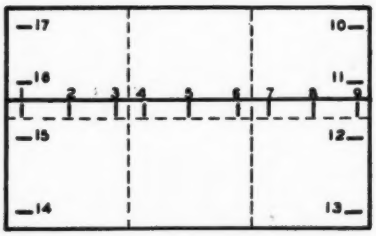


FIGURE 4. Stapling pattern for Overlap Slotted Container with inner flaps which do not meet.

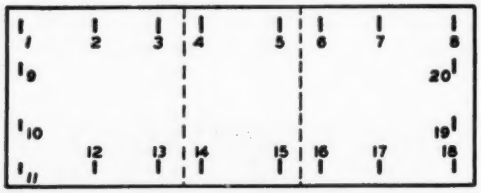
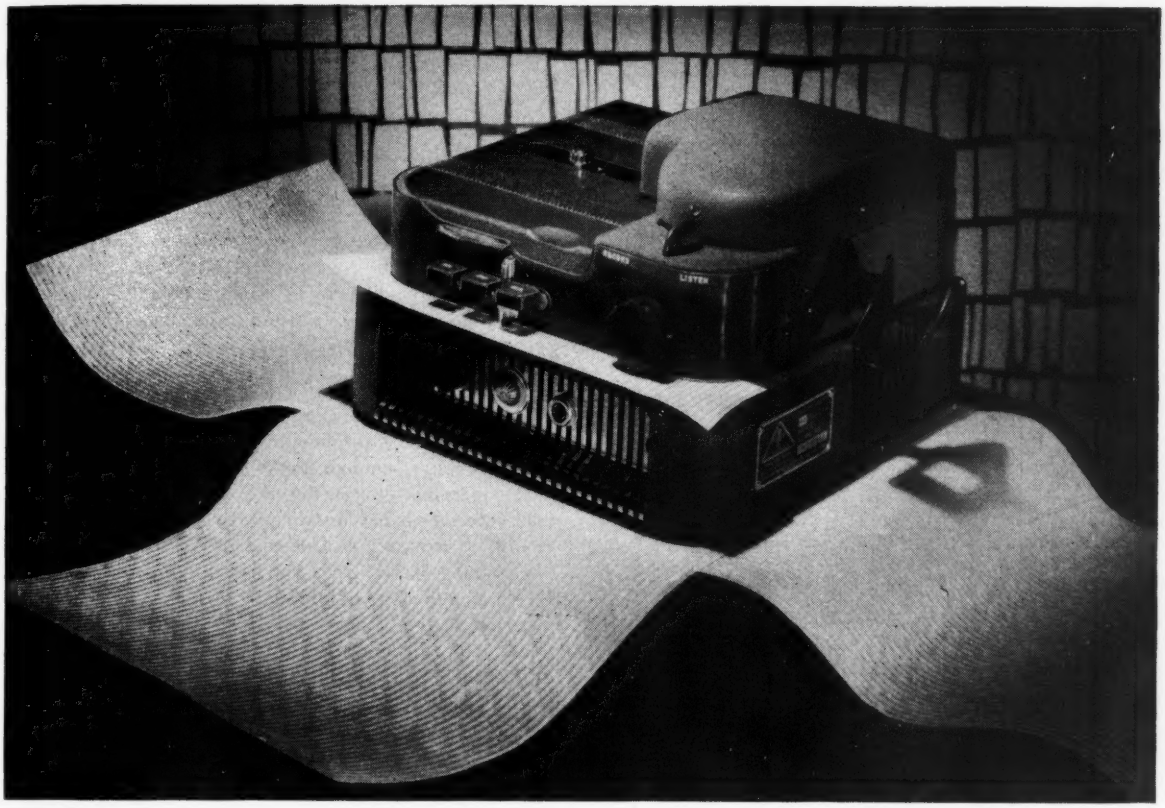


FIGURE 5. Pattern for Full Flap Container. All flaps overlap completely.



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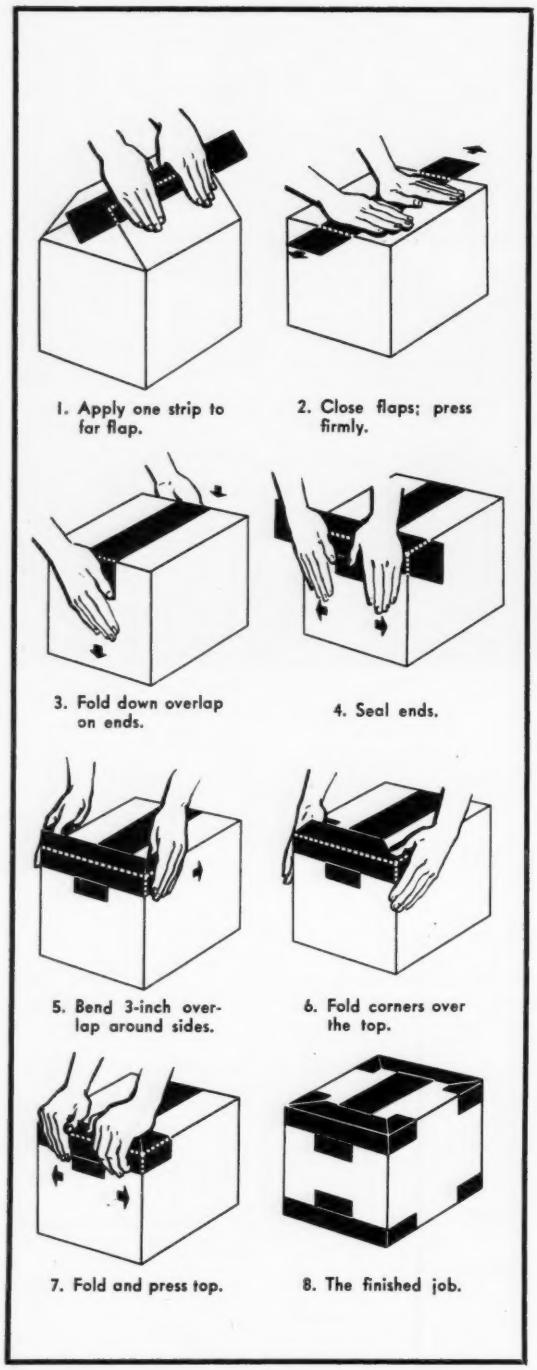
1. Apply one strip to far flap.
2. Close flaps; press firmly.
3. Fold down overlap on ends.
4. Seal ends.
5. Bend 3-inch overlap around sides.
6. Fold corners over the top.
7. Fold and press top.
8. The finished job.

FIGURE 6. For Maximum strength in closing with gummed sealing tape the above seven steps are a must. Important points to remember are: 1. Do not use too much tape; 2. be sure tape is moistened properly; 3. be sure carton is clean before applying tape; 4. apply proper pressure to tape to help insure its sticking properly.

appearance which adds to the selling power of the product enclosed.

No attempt will be made here to evaluate the merits of various types of closure materials available. The problems you encounter with your particular type of product and the conditions under which you ship should be carefully considered and should determine what material you use.

If You Use Staples . . .

What is the correct number of staples to use and what is the best pattern to follow in placing them on flaps of a box? Of course, enough staples should be used to provide adequate security, but on the other hand to use more staples than necessary is needlessly expensive. The actual number of staples necessary will depend on the size and type of box, and the size of staples you use. Fig. 1 shows a method for stapling the top or bottom of a regular slotted container measuring 20½" x 13½" x 8½". Note that since the container is longer than it is wide, the inner flaps do not meet at the center. For maximum strength, about 12 staples in both top and bottom are recommended. Four staples are placed in a line about ½ in. from each end of the outer flaps. Other staples are used at the points where edges of inner and outer flaps meet. In this type of closure, for best results, it is best to keep staples about 2½ in. apart.

In Fig. 2 is a recommended pattern for use of larger staples which are available for top and bottom closure. Only four staples are used on a box approximately the same size as the one in Fig. 1. With this method, staples are placed at each end of the outer flaps and at the juncture of the edges of the inner and outer flaps.

Other patterns for varying styles of boxes are illustrated in Figs. 3, 4 and 5. Fig. 3 pattern is for boxes where all flaps meet in the center of the container. The dotted lines

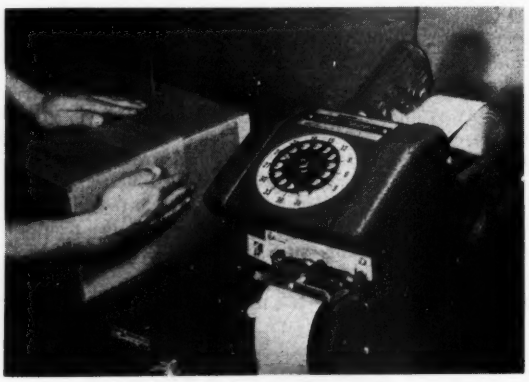

FIGURE 7. Whenever possible, use automatic dispensers. This is one of several excellent ones available. Many dispensers are designed to give you the correct length of tape properly moistened, ready to be applied. They may be electrically operated like the one above, or they may operate manually. In any case, they eliminate guesswork.

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indicate the center seam of the inner flaps. Fig. 4 is a pattern for containers where inner flaps do not meet, and where outer flaps overlap. Fig. 5 is a pattern recommended for a box with full overlapping flaps.

If You Use Tapes . . .

Water-Activated Gummed Paper Tape

Here is a list of do's and don'ts which you will want to be sure to follow if you use gummed paper tapes which must be moistened before using.

DO . . . . . Apply tape correctly by following closely the seven steps shown in Fig. 6.

DO . . . . . Store your tape properly. Keep it at moderate temperature and humidity away from radiators, open windows, or sources of moisture. Keep the tape in its original wrapper, tuck in flaps after removing roll, and use up your oldest tape first.

DO . . . . . Use automatic dispensers whenever possible. These devices are designed to eliminate guesswork in supplying a proper amount of tape correctly moistened. They will help you achieve a firm weld between container and tape, every time.

DO . . . . . Use the correct basis weight and width tape for your job. Center slotted type boxes which will carry less than 50 lb. should be sealed with 60♯ tape basis weight no less than two in. wide, preferably three in. wide. When over 50 lb. these containers should use 90♯ basis weight tapes, three or four in. wide. Telescope cartons when used for light weight merchandise are sealed with 60♯ tape in widths no less than two in. For weights in excess of 50 lb. three in. or four in. 90♯ tape should be used. Overlapping flap boxes should be sealed with 60♯ tapes for light

FIGURE 9. Time and study photograph showing movements required to close a corrugated container with reinforced tape. Two strips are used in this case, one across the top of the box, and another in a similar position across the bottom.

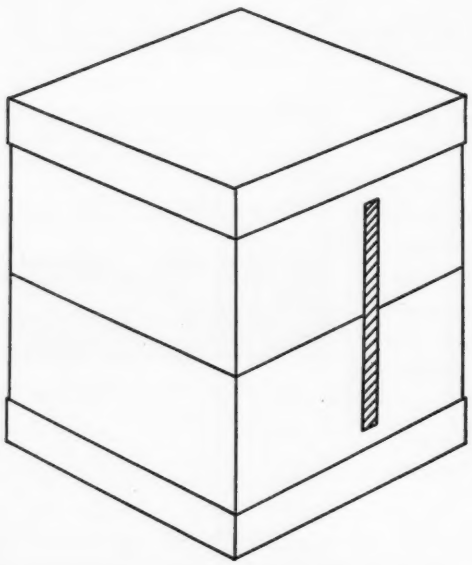

FIGURE 8. A short strip of pressure-sensitive filament tape is used here to close and to reinforce a container used for shipment of heavy construction hardware items.

FIGURE 10. Reinforced tape may be used in the manner shown here not only for closure of containers, but also to hold a group of them together to make a small, easily handled unit load. In this form, faster handling and loading is possible.

JAN-P-116 Packaging and Packing for Overseas Shipment. Methods of Preservation, May 1945 and amendment No. 2 December 1948 (Demonstrating Method 1A-1)

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MILITARY PACKAGING SIMPLIFIED # 2 of a series

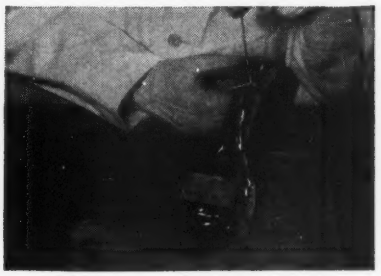
1. After connecting rod has been thoroughly cleaned and preservative applied, fill voids and pad ears with aluminum foil to prevent inclusion of moisture laden air.

2. Place connecting rod on sheet of aluminum foil (JAN-B-148) and wrap in usual way. Deadsoft properties of aluminum foil eliminate spring-back and speed production.

3. Completed foil greaseproof wrap. Note how foil may be molded to conform closely to odd-shaped object, thereby helping to keep preservative in contact with part.

4. Apply a Grade C Overwrap. Be sure a liberal size sheet is used to insure a perfect wrapping job. Fold wrap over the two ends of connecting rod first.

5. Continue Grade C Wrap by folding sides over, using "locked" folds where possible and sealing folds with sealer. If single dip method is used attach de-humidified dipping cord*.



6. Completed package after wax-dipping by single dip method. Label applied prior to dipping. If dipping compound is opaque label should be applied after dipping. Clip cord close to surface. Before packing apply non-blocking overwrap.

*The use of an aluminum dipping cord (⅛"-¼"—.004 gauge) has been approved by Army Ordnance and prevents "wicking" normally found in cloth cords.

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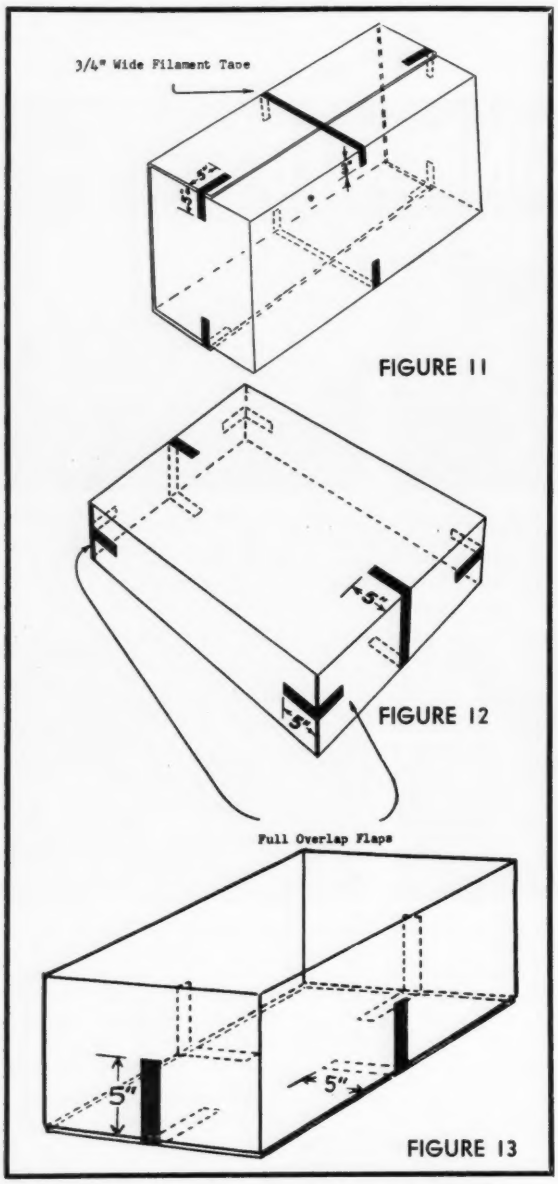

FIGURES 11 and 12. Pressure sensitive tapes used on overlap flap boxes. FIGURE 13. Fully telescoped box. FIGURE 14. (below) Long, narrow telescoped box sealed with five strips of pressure sensitive tape.

weights and 90# tapes for heavy weights. Tape should be three or four in. wide here too.

DON'T . . . Use excess amounts of tape. To double strip your carton is only waste. It doesn't increase strength and detracts from the appearance of the box.

DON'T . . . Slit corners. This will not make a smoother corner, and only reduces strength of tape where it is needed most — at the juncture of the open end and scoring of flaps.

Reinforced Tapes

Several types of reinforced tapes are available for closure. Fig. 9 illustrates how one type can be used successfully with only a strip across the center of the box. Both top and bottom are closed in that manner here. If quantities of boxes are to be shipped out together, Fig. 10, a single strip of reinforced tape may provide enough strength, not only for keeping boxes closed, but also for holding a group of them together as a small unit load. Results: time savings and easier handling.

Pressure Sensitive Tapes

Pressure sensitive tapes may be filament reinforced, or they may be flatback or acetate fibre types. In Fig. 8, a pressure sensitive filament reinforced tape is used on a type container primarily used for shipping heavy construction hardware items. The overlap flap containers in Figs. 11 and 12 are each closed with six strips of pressure sensitive tape. Fig. 13 shows the use of reinforced tape on a fully telescoped box. On a long, narrow box, Fig. 14, five strips usually suffice if used as shown, with three strips carrying around the girth, and two strips holding the ends closed.

Definite-length dispensers are available for use with pressure sensitive tapes. They are designed to provide the proper length of tape at a single stroke of the handle.

FLOW wishes to thank the following organizations for their cooperation in preparing the preceding survey: Angier Corp., Bostitch, Gummed Industries Assoc., Gummed Products Co., International Staple Co., Marsh Stencil Machine Co., Minnesota Mining & Mfg. Co.

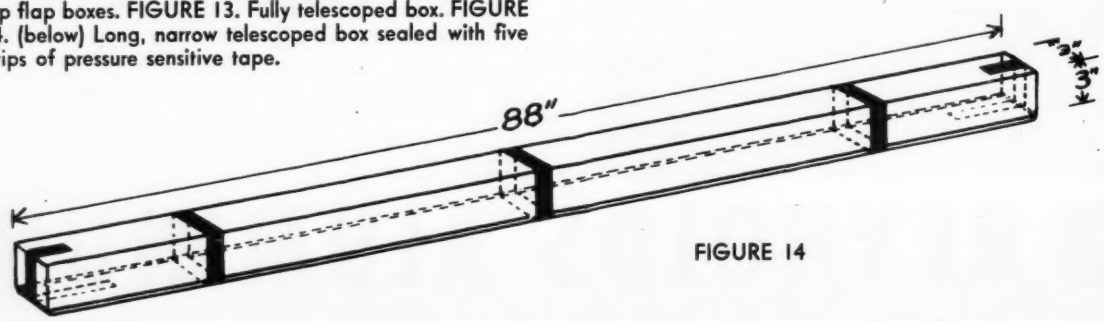

FIGURE 14

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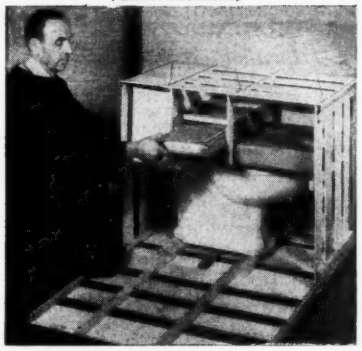

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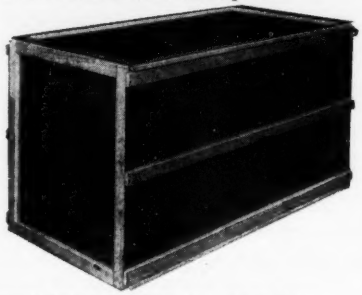

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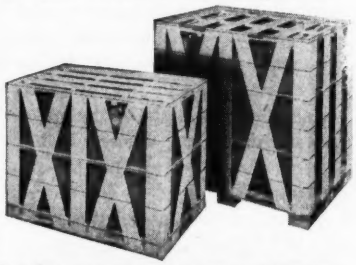

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"Concealed" damage is eliminated by these new, open-type wirebound crates "centric pressure-packed" by American Box for greater protection, convenience and economy. Paper cover is optional. "Pressure-packing" the base, guards the rest of the unit from harmful contacts. "Palletizing" simplifies handling of the 400 lb. furnace. Wrap-around assembly is quick, easy. Twist-type closures are sealed, tamper-proof. Ask for complete details.

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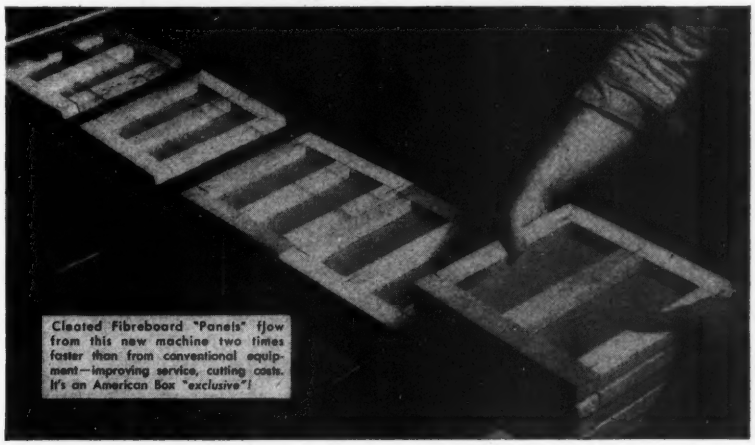

Cleated Fibreboard "Panels" flow from this new machine two times faster than from conventional equipment—improving service, cutting costs. It's an American Box *"exclusive"*!

3 new machinery developments give American customers best buys

Modern machinery engineering at **American Box** cracks down on inflation! We "scooped" the entire field with the **world's fastest panel machine,** developed in our own plant—an **American Box "exclusive."** It **doubles** production of cleated panel boxes—cuts manhours to the bone. New heavy-duty wirebound machinery and new automatic sawing machinery work wonders in our wirebound and nailed wood box production. The **better quality, faster service** and **lower prices** are passed on to **you!** Make us **prove** it. Compare "quotes" now!

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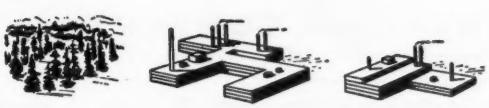
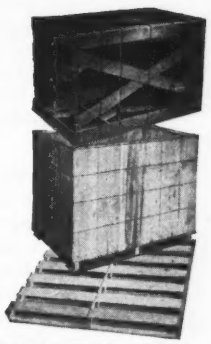
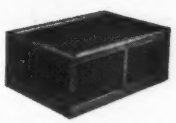


THE *American* BOX CO.

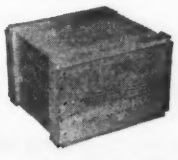
1909 W. 3rd Street Cleveland 13, Ohio **Phone: SU 1-5200** **Marion, South Carolina**



American Wirebound Crate, Tote Box, Pallet



American Fibreboard Box



American Nailed Wood Box

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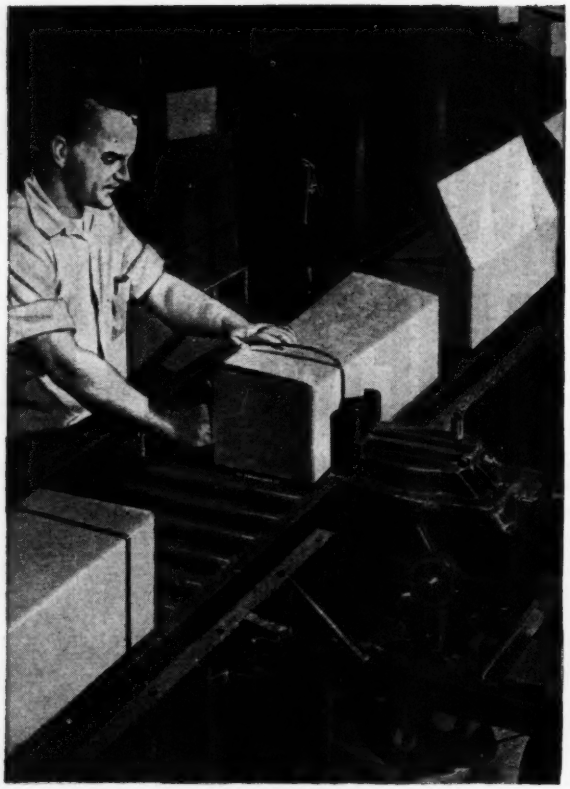

Signode equipment boosts output of strapped packages 190 a day!

An eastern manufacturer, using Signode equipment, was turning out 560 packages every day. He was 100% satisfied. But the Signode field man in that territory wasn't. He was sure that he could step up the output of packages and reduce unit packaging costs with Signode's new Power Strapping Machine.

The Signode Power Strapping Machine was put in the production line. The number of packages strapped for shipment jumped from 560 to 750 —190 more per day! Unit cost dropped. Yet, compared to many other Power Strapping Machine installations, this is not a particularly fast operation. In the flooring industry, for example, these machines apply up to 750 straps per hour.

Would you like to talk over your packaging and shipping needs with a Signode field man? No business is too small or too large— no operation too complex. Write

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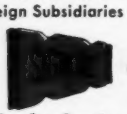
this seal  *means security in shipping*

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CUSHIONING . . .

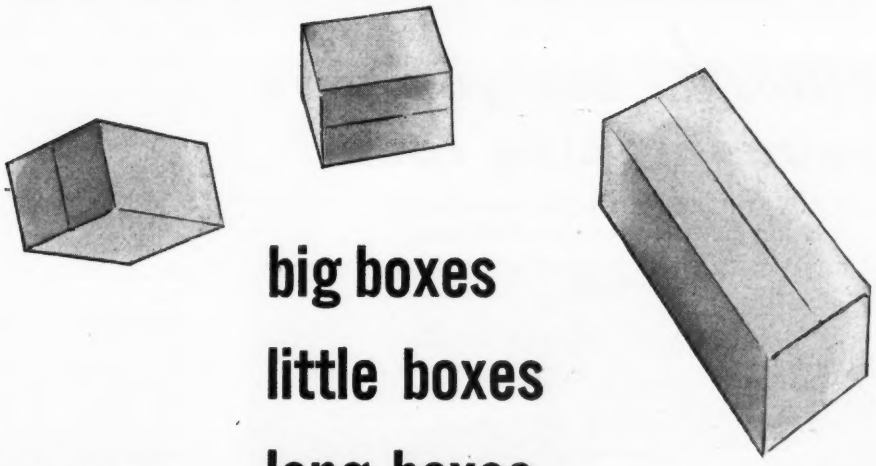
(Continued from page 102)

starts at zero at the time of contact, increases to a maximum when the product is stopped, and returns to zero as the compressed cushioning returns the product to its original position. Divide the peak load by the product's weight, to express load in gravitational units or g's. Divide average load by weight for average acceleration experienced during the period of shock. The cushioning G-factor, then is the peak acceleration (divided by the earth's acceleration) or the peak load (divided by the product weight) which the product or its weakest component can sustain without damage. This G-factor indicating the maximum load the product will tolerate is normally much greater than that employed by aircraft designers because the higher load lasts for only thousandths of a second where a pull-out or other maneuver may last for several seconds. In addition, satisfactory product operation during the time of loading is not required as in flight conditions. However, the G-factor represents a convenient way for product and package designers to express the overall strength of the product in calculating the protection required.

How To Determine Load Compression Characteristics

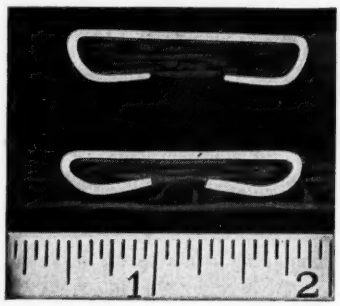
The major factor affecting the energy storing ability of a cushioning material is its load-compression characteristics. Since these are rarely supplied by most cushioning manufacturers, the designer must obtain his own curves. This can be most easily determined by placing increasing amounts of weight on the material and measuring the change in thickness, (Figure 4). The resulting thicknesses obtained under the various loads can be converted to percentages of original cushion thickness and plotted as in Figure 5 against the weights in lb. per sq. in. used to compress the cushioning.

As expected, different types of materials have different characteristics. Primarily, the shape of the load-deflection curve may change depending how the material acts under increasing increments of loads. If it always deflects a proportionate amount in re-



big boxes
little boxes
long boxes
short boxes
fat boxes
square boxes

Cross section view of upper standard staple clinch and lower concealed staple clinch actual size.

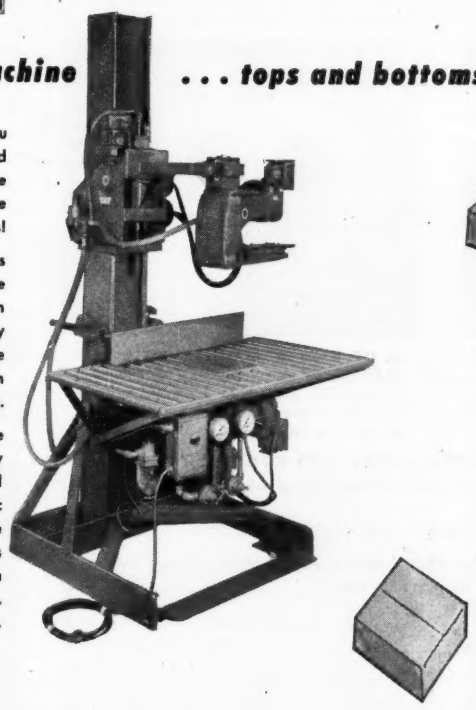


close 'em all on one machine . . . tops and bottoms simultaneously!

Whatever your closure problem—if you use corrugated and fibre cartons, and particularly, *if you use different size cartons*—it will pay you to investigate International stapling machines!

International stapling machines close tops and bottoms simultaneously—and close 'em fast. They use less staples in an exclusive pattern (Rule 41 CFCPR)—they save you material, manpower and space—they close different size cartons on the same machine.

International stapling machines are made in 30 models and prices to exactly fit your needs—from portable hand operated models to the latest in automatic equipment. Investigate today—join the hundreds of nationally famous companies who are now saving up to 50% on shipping costs with International machines. Write for full details.



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HERRIN, ILLINOIS • *Distributors in principal cities*

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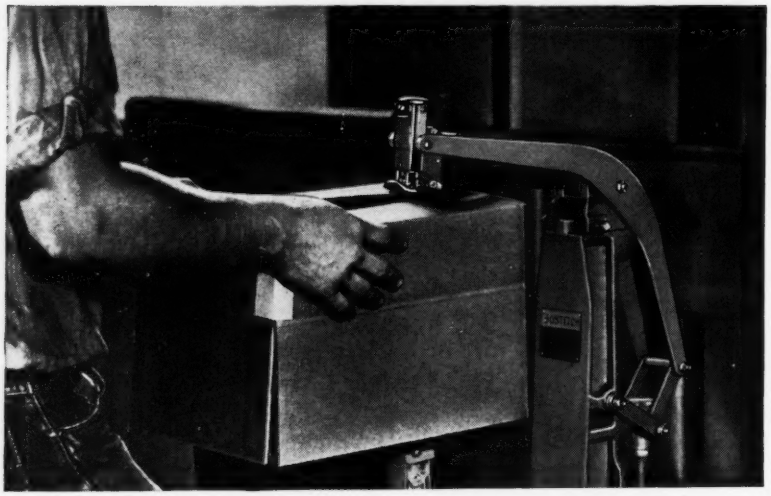
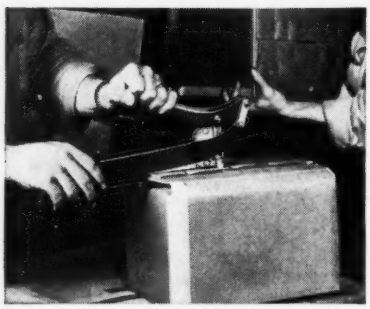
SEE HOW THIS SCHOOL BOOK DISTRIBUTOR CUT HIS CARTON-SEALING COSTS 70%



1. HE USES A BOSTITCH FOOT-POWERED BOTTOM STAPLER to make up corrugated cartons three times faster than taping and gluing. Bostitch staples also give him stronger, neater packages . . . No more postal complaints because of improper sealing . . . no more book rejections because of smudges from glue and tape. His shippers, too, prefer Bostitch stapling over the taping, gluing, string-tying and wire-binding methods formerly used. For the same reasons, it will pay you to investigate the cost-cutting possibilities of Bostitch stapling in your shipping room.



2. HE USES A BOSTITCH HEAVY-DUTY STAPLER — equipped with a long, thin sealing blade — to top-seal his bulky shipping cartons. Also three times faster than gluing and taping.

3. HE USES A BOSTITCH PLIER-TYPE STAPLER to seal corrugated wrap-around packages for single-book shipments . . . and saves time, money, and labor. Eliminates need for made-up mailers.

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BOSTITCH, 386 Mechanic Street, Westerly, R. I.

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fastens it better, AND FASTER with wire

ALL TYPES OF MACHINES FOR APPLYING STAPLES

ALL TYPES OF STAPLES APPLIED BY MACHINES

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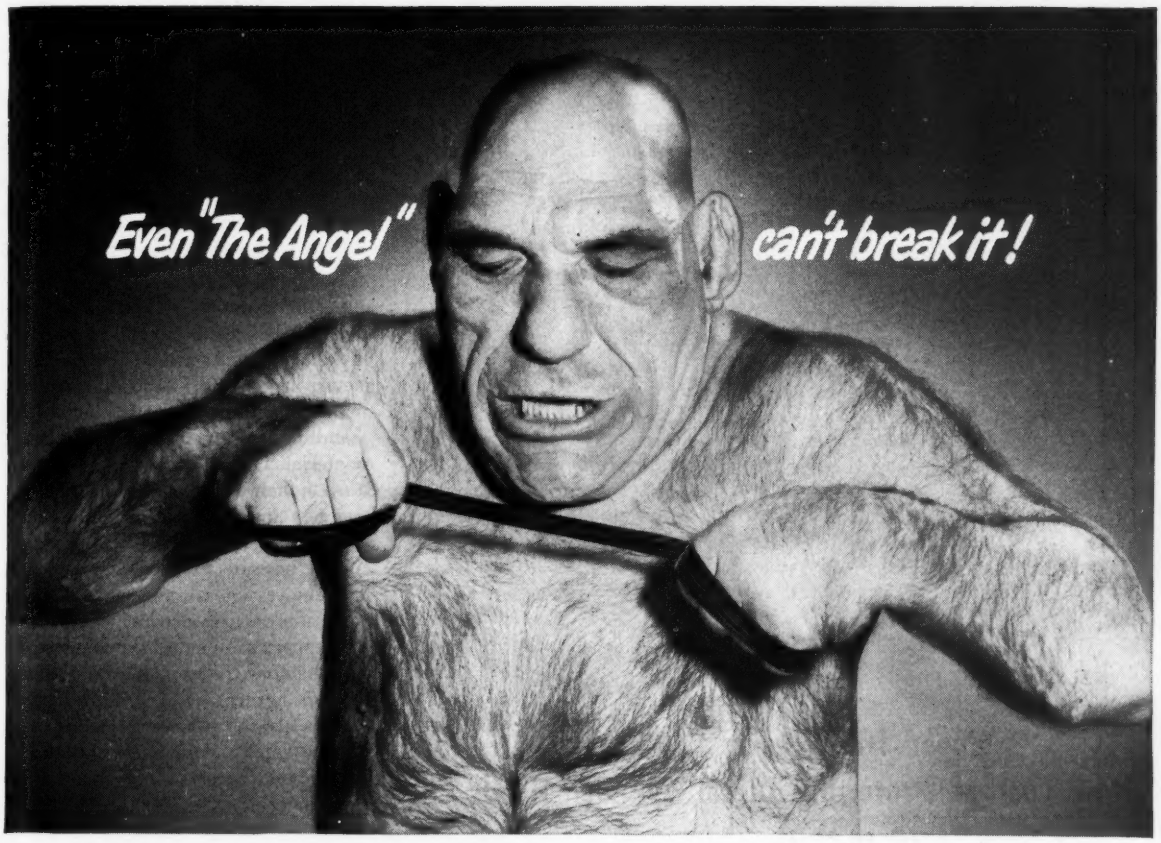
lation to the load such as increasing from 25% to 50% when the load is doubled, the material's compression curve is said to be linear as in Figure 5. A spring is an excellent example of this type of material. Other typical curve shapes are presented here using the classification developed by R. E. Mindlin's *Dynamics of Package Cushioning*, Bell Tech. Journ. Vol. 24, pp 353-461, July, Oct. 1945, an invaluable mathematical treatment of this subject.

Figure 6 illustrates Load-deflection curves of five types of materials. The tangential type (B) is the type curve for most bulk cushioning materials. This fact is plainly understood if one considers that any homogeneous material which has a measurable thickness will become increasingly firm as the material is compressed to a thickness approaching zero. Cubic cushioning (A) in most cases is merely the initial portion of the tangential curve where the material has not been compressed to the point where its deflection would approach the zero thickness value.

Compression Set

Cushioning materials must be resilient to provide continued protection against the many handlings and shocks received in transit. As most available materials are not completely elastic, the materials under continued load loss height, a condition termed "set". If the load is removed, the height will be less than its original height. Figure 7 schematically presents the application and removal of load with the subsequent height loss. However, once the load has been removed, the material will continue to regain its height, a phenomena termed "recovery", so that the height measurement depends on the elapsed time between load removal and measurement. Therefore, height loss is always measured at a fixed interval of time after the removal of the load. "Permanent set" is the height loss due to internal damage or dislocation of the material which remains after recovery has reached its end point. This is important since set changes the dimensions of the cushioning thereby introducing unfilled space that permits the product to move freely or rattle in the package. Result: greater accelerations in handling and vibrations in transit. Set also changes the characteristics of the cushioning as Figure 7 illustrates. Work at the Forest Products



World's strongest tape?

You can tow a truck with it, lift huge weights with it! "Scotch" Brand Filament Tape is so strong even "The Angel," famous French wrestler Maurice Tillet, can't break it. And it's *resilient*, too—absorbs jolts and jars again and again.

That's why companies like IBM, Gulf Oil Corp., American Cyanamid Co. and others find this new kind of packaging tape does the job on their heavy-duty strapping, banding, palletizing.

It gives up to 10 times the tensile strength of most other pressure-sensitive tapes because it's made with thousands of continuous rayon or glass filaments. And it withstands repeated impact shock because these filaments are embedded in a tough, pressure-sensitive adhesive.

Try it today! If you'd like more facts or a free sample roll for testing purposes, write Minnesota Mining & Manufacturing Co., Dept. FM-42, St. Paul 6, Minnesota.

NO SLIPPING of unit or palletized loads when "Scotch" Brand Filament Tape bands top layer of cartons together at Gulf Oil Corporation! Tape takes hold, holds tight, has no sharp edges.

Quick facts about
"Scotch" Brand Filament Tape

- **SHOCK-RESISTANT**—absorbs jolts and jars again and again.
- **SAFE**—no sharp edges to injure workmen.
- **ECONOMICAL**—short strips handle big jobs.

The term "Scotch" and the plaid design are registered trade marks for the more than 200 pressure-sensitive adhesive tapes made in U.S.A. by Minnesota Mining & Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 270 Park Avenue, New York 17, N. Y. In Canada: London, Ont., Can.

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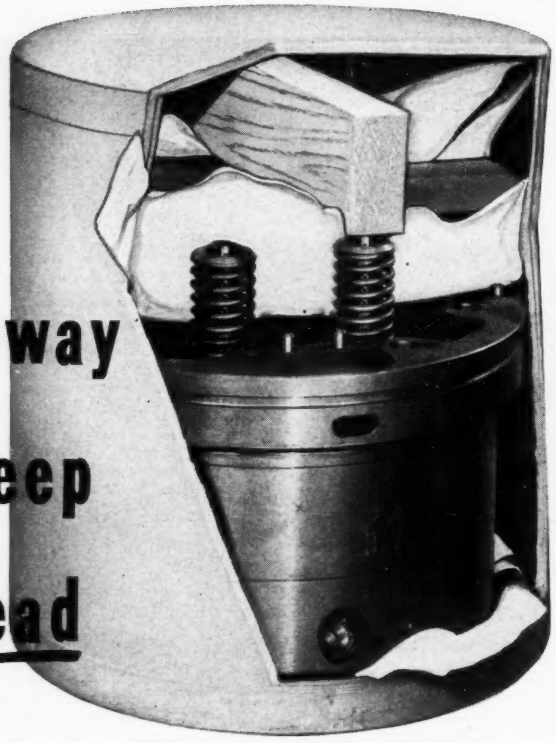

Best way to keep a Head

Vapor-from-Paper STOPS RUST — Now Cost of Protecting Diesel Cylinder Heads is Cut from $4.70 to $1.31

You're looking at a revolutionary way to keep a Diesel cylinder head from rusting.

A leading locomotive firm used to dip heads in an inflammable cleansing liquid. Then moisture had to be removed. This called for cranes and fire precautions. Dried with an air hose, this cylinder head was dipped into a varnish-like solution. To keep the sticky coating in place, waxed paper and heavy wooden boxes were "musts". Unpacking involved the same troubles in reverse. A couple of hours with a scrubbing brush came before the head could be installed in a Diesel.

Today, vapor-from-paper stops rust! This magic-like paper is Angier VPI* Wrap. It gives off an invisible protective vapor that is clean . . . SAFE! As the vapor permeates into deepest cavities, both air and moisture are made harmless to shiny cylinder heads. No grease or oil is necessary. Now packaging costs are down to $1.31 from $4.70. And this doesn't include an average freight savings of 24% on the thousands of different locomotive parts that now are VPI-protected. All parts are ready to use when received . . . a godsend to men in the repair shops. No bulky equipment is required, so valuable floor space is saved.

If you ship or store metal parts or products, Angier VPI Wrap is meant for you! It may be used as a box liner or an envelope as well as a container insert. For "VPI Facts", write to the most experienced name in vapor rust preventives . . . Angier Corporation, Framingham 13, Mass.

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VPI* WRAP

Sold Nationally Thru Distributors . . . Who Also Sell Angier Reinforced "Snake Tape"; "Induwrap" — the Original Grade A Greaseproof Barrier; the new Angier Glass Wrap, A-G-W and Other Protective Papers.

* ® Vapor Rust Preventive

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Laboratory, Madison, Wisconsin, determined that the maximum set will have been introduced in the cushioning after four or more free falls. Therefore, the cushioning should be precompressed to compensate for this anticipated height loss. Of primary importance in many cases is that materials with minimum set be employed and that allowances be made for set in any cushion design.

Energy Storage

If the cushioning material was not completely elastic, when compressed by the packaged article it would not return to its original position to provide protection against further rough handling. However, resilient or elastic materials that are not overstressed return to their original position (neglecting set) and thereby return the energy of compression to the article by pushing it upwards. When all the energy of compression is returned to the system, the moving product compresses the upper cushion and so will oscillate the cushioning for an indefinite period of time. Since actual cushioning materials are not perfectly elastic, some of the energy is converted into heat by friction or plastic deformation of the material. These forms of energy are unreturnable and this fraction of the total energy is absorbed by the cushion rather than stored. Figure 8 graphically presents this concept in the form of a load-deflection curve where the upper curve representing the application of force to the cushion has more energy stored under it than the lower curve which represents the unloading or energy return condition. The cross hatched area between the two curves represents the absorbed energy which cannot be returned. For any specific material, this area probably varies with the amount of load and how rapidly it is applied, and is usually expressed mathematically by a factor called damping. The exact relation of damping factors for cushioning materials is not completely understood at this time.

Efficiency

Of equal importance is the fact that the area under the load-compression curve which represents the energy stored in the cushion will naturally vary as the shape of the curve changes between any two points; for example, points X & Y in Figure 9. Assuming X & Y are zero load and the maximum load, the cushion storing the most

energy will be that which has a shape that contains the greatest area beneath it when loaded to its maximum at point Y. As Figure 9 demonstrates, the greatest area is under the rectangle shown in A but this is not obtainable in available materials. B represents a spring that gives exactly ½ of the maximum area possible whereas C and D represent intermediate types of a practical shape found in common cushioning materials. Review of Figure 9 proves the material with a hyperbolic function or curve is the closest practical one to the ideal area shown in Figure 9A, and would be the most effective cushion from an energy storing viewpoint. Furthermore, by comparing the energy-storing capacity (area under curve) of each material with its maximum possible energy at the same load and deflection, we obtain an efficiency factor where

$$\text{Effic.} = \frac{\text{area under curve}}{\text{Max. possible area}} \times 100\%$$

that can be employed to compare materials without resorting to higher mathematics. This concept is presented in tabular form in *Ride and Vibration Data booklet.* SP-6. which is a collection of extremely useful tables put out by the Society of Automotive Engineers in 1946 for the package cushion designer. To compare efficiency of two or more materials, all that is necessary is to measure the area under the load deflection curves of each material for the same load and deflection conditions expected in the drop test or rough handling.

Loading

The problem of selecting the proper stiffness cushion for an article of given weight has been neglected heretofore in this discussion. The solution is very simple. Each face or side of the packaged article bears on the cushioning. If the cushioning is fitted and located properly it will support the article evenly so that each square inch will receive the same load. Therefore, if the weight and the maximum acceleration are known, the maximum load will be the product of these two factors Lmax= WxGmax. By dividing the total maximum load Lmax by the area of the side to which the shock is applied, the load per unit area is obtained ; F max (lbs. per sq. inch)= W x G m /Area. Figure 10 demonstrates this schematically. Figure 11 shows that for any given load- deflection curve at the maximum cal-

BUILT TO YOUR SPECIFICATIONS

* Single faced * Double faced
* Single faced with reinforcement (as illustrated).

In any dimensions . . . Central Fibre Pallets can be produced to meet any shipping or storing requirements.

Write for samples, prices, and further information.

★ Rugged, lightweight, economical, one-way corrugated pallets for more efficient storage and shipping. Investigate the possibilities of using these units in solving your materials-handling problem for either civilian or government orders.

Xpendo-Pacs are made under patents owned by the Addison-Simmes Corp. of Racine, Wis.

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CENTRAL FIBRE PRODUCTS CO., INC.
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FOR lower production costs . . . stronger, neater closures . . . ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your particular requirements. ASK FOR RECOMMENDATIONS.

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Gentlemen: Without obligating me, please furnish information on bag closing equipment to handle the following production:

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Phase_____ Cycles_____
Name_____
Company_____
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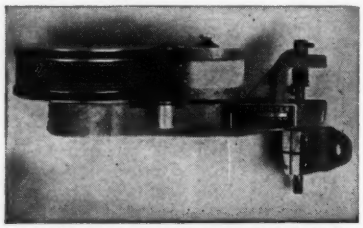

Automatically dates, codes, or marks production runs of cartons, packages . . . readily adapted to your present conveyor lines.

Friction between Marker and moving package or carton will imprint date, code or any other information. It will automatically spot-print legend. In operation the printing drum spot-prints, turns immediately in ½ revolution or less to a positive stop; then is ready to repeat the cycle. There is no oscillation of the printing drum.

Inking is through a felt roller that has a self-contained reservoir.

Uses interchangeable rubber type.

Used by candy manufacturers, distillers, oil companies, food packers, etc., to mark filled bags, cartons, boxes, rolls, cans, etc.

Send for "Free" Catalogue

We make machines to print corrugated cartons and multiwall bags that are filled or flat.

THE INDUSTRIAL MARKING EQUIPMENT COMPANY, INC.
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culated load, a certain deflection will result. Once the maximum unit load is determined, the essence of the whole design method is to keep the deflection at maximum by a proper choice of material in order to give the article more room to slow down. This reduces the deceleration loading applied to the article by the cushioning to a level the article can safely withstand. This latter goal can also be achieved by spreading the total load over a greater area such as in the floating package of Figure 12. Here the article of small surface area is placed in a container of greater surface area that is in turn cushioned in the shipping container.

Design Procedure

Once the above elements have been grasped, they can be applied to any cushioning design problem as in this example below which must meet a 30 inch drop test.

Article: Gyroscopic Instrument
Wt = 5.0 lbs.
G-Factor = 30 g's Maximum
Length =6 inches
Diameter = 8 inches — Area of Bottom = 50 sq. in.
Max. unit load:

$$F_m = W \times G_m/A = 5 \times 30/50 = 3 \text{ lbs/sq. inch}$$

Using the load-deflection curve of Figure 5, the deflection at 3 p.s.i. is 75% and the efficiency is 50% as the area under the line is exactly ½ that ideally available.

Thickness of cushioning required:

$$Th = h/G_m \times d_m \times eff.$$

$$Th = 30/30 \times .75 \times .5 = 2.67 \text{ in.}$$

Thus, we require 2.67 inches of a cushioning material with the curve shown in Figure 5 to prevent the product from experiencing more than 30 g's when the package is dropped on its base or top from 30 inches. The same procedure applies to the side except the area is different and so the maximum unit load will be slightly different.

Conclusion

To conclude, if the designer has all the facts concerning his product and his cushioning materials, the design procedure itself is very simple. Furthermore, he can readily determine which material is the most economical by comparing it on the basis of efficiency, freedom from set and other practical factors that will ensure the product's safe delivery.

Super-strong reinforcement for containers, too

TAPE-STRAP*

More than 500 lbs. of pulchritude swing securely on a strip of "Tape-Strap" reinforcing tape.

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MID-STATES Gummed Paper Company
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BRANCH OFFICES: New York • Philadelphia • Cleveland
St. Louis • Detroit • Los Angeles

Packaging costs drop . . . as much as 85% . . . when you switch to super-strong, easy-to-use "Tape-Strap" for carton reinforcement. This gummed filament tape has a tensile strength of 180 pounds per inch of width.

"Tape-Strap" is so strong that short, 10-inch strips are all you need for most applications. The tape is so quick and easy to apply that shipping room operations speed up. Users report spectacular time savings . . . as much as 75%.

You need no costly equipment to apply "Tape-Strap." It's quick, easy, and safe to use. No sharp edges to cut, and it's applied without pressure.

Write for free sample roll and complete data.

DROP TEST...

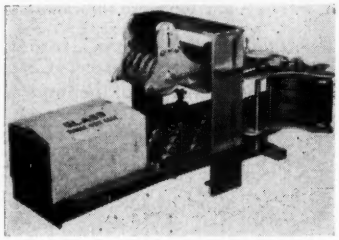
TAPE-STRAP holds after 126 falls. Four 10-inch strips of "Tape-Strap", one across each side seam, reinforce this Belsinger Box, loaded with 100 pounds of screws. After 126 falls in the drop tester, the carton is failing, but "Tape-Strap" still holds the seams.

"Tape-Strap" is approved by the Official, Southern, and Western Classification Committees (Rule 41, Sec. 8 (b), Supp. 29, C.F.C. No. 19) and by Railway Express Agency, Inc., (Supp. No. 36 to Official Express Classification No. 34).

*"Tape-Strap" is the trade mark of the brand of filament tape manufactured by Mid-States Gummed Paper Co.

Box Marking Machine—*Industrial Marking Equipt. Co.*

A printing machine for use on containers already filled has been introduced by Industrial Marking Equipment Co. It prints top and side of filled corrugated or fibre containers and can be set into regular packaging lines, thus eliminating large inventories and advance purchase of printed containers. The machine uses rubber type or mats which are said to be quickly interchangeable. Side rails are adjustable to take various sizes of containers. Spring loaded pressure rollers compensate for variations in container thickness. Where production time is essential, the machine can be used for addressing too.



Circle No. 196 on Reader Service Card for more information

Lining—*Sponge Rubber Products Co.*

Rubberized curled hair is used by The Sponge Rubber Products Company to make Texlite—a lining material for cases, cartons and containers that cushions your shipments against damage in transit. Designed specially for delicate and costly equipment, Texlite is made up in three forms: Spongex cellular rubber; Spongex Cell-Tite (almost

Automatically prints dates, codes, names, etc., on containers, products or other surfaces. Uses the Force Base-Lock Interchangeable Rubber Type of all sizes, permitting instant changes when necessary. Pays for itself in time and money saved. Self-inking. Gets power thru friction roller attachment. Adjustable for height. Write for full information today or mail "specs" for further data.

Base-Lock quick change type . . .

WM. A. FORCE
& COMPANY, INCORPORATED
216 NICHOLS AVENUE, BROOKLYN 8, N. Y.

The FORCE Line of Numbers

OBSERVE THE RULE...
GET YOUR SHIPMENTS THRU!

Carriers *know* stencil marked addresses eliminate losses, prevent delay, assure fast delivery. Saves time and money in your shipping room. Electric and Hand Operated machines cut ½", ¾", 1" letters For sample stencil, Shippers' Handbook, prices, pin this to business letterhead with your name.

MARSH STENCIL MACHINE COMPANY
67 MARSH BLDG., BELLEVILLE, ILL., U.S.A.

Circle No. 67 on Reader Service Card for more information

Making a quality product is YOUR business.. Packaging it properly is OUR business!

THAT IS WHY . . .

so many companies with U. S. Government contracts requiring method IA-3, IA-8, IA-9, IIa, IIb, or IIc type packaging in flexible moisture-vapor proof barrier material, use AMSCO packaging equipment.

AMSCO equipment is specifically designed to properly fabricate, handle and seal barrier materials. During World War II, AMSCO pioneered in the development of dependable, diversified barrier packaging equipment.

Avoid the danger of improper packaging and great loss of money by rejects. SEND FOR YOUR COPY of AMSCO BOOK "BARRIER TYPE" Packaging for U. S. Government orders. Available at no charge. Write Dept. F-4.

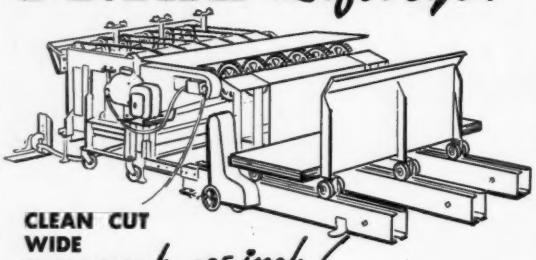
IMPORTANT

Many Government contracts specify packaging in Polyethylene, Cellophane or Pliofilm. AMSCO has equipment for fabricating, handling and sealing these materials.

Amsco **AMSCO**
PACKAGING MACHINERY, INC.
31-31 48th Avenue, Long Island City 1, N. Y.
Specialists in diversified Packaging Equipment

Circle No. 85 on Reader Service Card for more information

FRIED *Liftveyor**



CLEAN CUT WIDE SHEARING *to .005 inch!*

Efficiency goes up and costs go down when a FRIED LIFTVEYOR is teamed to your shear. This unique device provides sturdy "flex free" support of all sheet: Iron, Stainless Steel, Bronze, Aluminum . . . positions for cleaner cutting at closer tolerances . . . conveys sheared lengths beyond shear frame, without marring, to FRIED Stacker, shop truck or skid.

Ball point plungers that support sheet are pneumatically actuated by foot treadle synchronized with your shear. Sheared strip lowers to conveyor — plungers return for next support assignment.

Shear FASTER, SAFER, MORE ECONOMICALLY *with* FRIED STRIP HANDLING EQUIPMENT

FRIED *Stripveyor*

Patented

AUTOMATICALLY PICKS UP AND CONVEYS STRIPS BEYOND SHEAR BED

Get full capacity service out of your shear and get it *without risk . . . with less manpower.* Employ a FRIED STRIPVEYOR to pick up and carry strips beyond the shear bed *automatically* as fast as your shear can cut. *Can pay for itself in as little as 100 working days!*

As each section is sheared, it slides down an adjustable pick-up chute which butts against shear bed . . . As sections are delivered to table they slip back and are caught by toggles; then, are picked up by horizontal angles connected to endless link chains. Round steel fingers reach below table deck—pushing material in front of them. Material is raised to desired point, then dropped to a Stacker, shop truck or skid.

* Patent Pending

Investigate the complete line of Fried Strip-Handling Equipment . . . Write for descriptive literature.

FRIED STEEL EQUIPMENT MFG. CORP.
528 EAST 119TH ST., NEW YORK 35, N. Y.

Circle No. 86 on Reader Service Card for more information

zero water absorption); Texfoam latex foam rubber. Any of these liners can be formed to keep your product in top shape through the roughest trip.

Circle No. 197 on Reader Service Card for more information

Improved Impact Recorder—*Impact-O-Graph Corp.*

New features reported for the latest design of the Impact-O-Graph, impact recorder are: a new strong, light-weight plastic case; a recording stylii bracket which is affixed to the cover to allow greater freedom of movement by stylii and a more positive mark on the processed tape; a new non-slip drive which rigidly controls the one-inch per hr. rate of movement on the tape, plus many other practical features which improve the accuracy and operation of the instrument. The instrument records the time of shock and direction and severity of jolts when used to trace down cause of shipping damages.

IMPACT-O-GRAPH with cover open. Note recording head with stylii on cover.
IMPACT-O-GRAPH ready for use. Note recording unit through special transparent case.

Circle No. 198 on Reader Service Card for more information

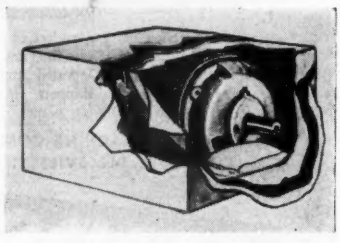
Marking Machine—*Cadillac Stamp Co.*

The Cadillac 45 Hydraulic Marking Machine is a compact, self-contained, manifold mounted, hydraulic unit. Among the advantages claimed by the maker, Cadillac depth with one control. It marks by a rolling method in comparison to punch press operation. This is said to reduce the pressure to a very small fraction of those otherwise necessary for indenting — minimizing possibilities of fracturing and distorting parts being marked. It will mark any shape, including uneven surfaces. Maximum capacity is 110 one-in. impressions per minute.

Circle No. 199 on Reader Service Card for more information

Barrier Material for Military Packaging
—*Dobeckmun Co.*

Are you troubled with packaging for the military? Here is a method which makes packages moisture and vapor proof. Dobeckmun Metalam, a barrier composed of laminated combinations of foil to other materials, is wrapped around an inner carton which contains the item being shipped. It is then placed in an outer carton. Although not shown here, the contents would first be wrapped in Grade A paper before final packaging. For further information on the barrier material used here, and on ways to package for the military, use the number below.



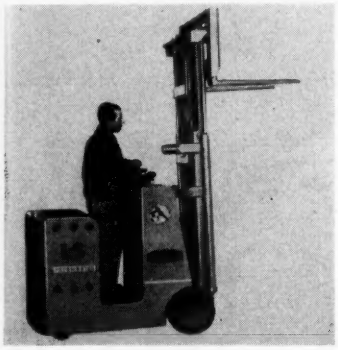
Circle No. 200 on Reader Service Card for more information

NEW PRODUCTS . . .

(Continued from page 47)

Freight Terminal Fork Truck—*Lewis-Shepard Prod., Inc.*

An electric fork truck specifically designed for docks, warehouses and terminals has been designed by Lewis-Shepard Products, Inc. The 1500 lb. capacity truck has a 59-in. turning radius for maneuverability in narrow aisles, lifting speed of 50 fpm when loaded, and a speed of 6 mph. According to the manufacturer, it cuts the cost of maintenance because there are no grease points and no under truck adjustments to worry about.



Circle No. 201 on Reader Service Card for more information

Freight Elevator Sill—*Alexander Sill Co.*

This device operates like a drawbridge over the gap between a freight elevator and building floors to provide a smooth surface for trucks entering or leaving the elevator. Various models are available to fit all types of elevators. They can either be mounted on the elevator car or to the building floor at each elevator door opening.

Circle No. 202 on Reader Service Card for more information

Extra-Heavy Pneumatic Tube—*The B.F. Goodrich Co.*

An extra-heavy pneumatic tube has been developed as an answer to one of the major problems in the use of pneumatic tires on mobile mine equipment—the inflation of tires on shuttlecars. Made of butyl rubber, the tubes are built almost twice as thick as conventional tubes used in this service. They are made in three sizes: 7.00-15, 7.50-15 and 8-25-15. These tubes are said to be able to hold their recommended air pressures from one year to 18 months with only minor reduction in air pressure. They are equipped with a special valve cap which can be put on or taken off only with a small key.

Circle No. 203 on Reader Service Card for more information

Floor Patching Material—*Permamix Corp.*

A floor patching material which, it is claimed, can be used on any present type of flooring has been developed by Permamix Corp. It is said to be ready for instant use,

Circle No. 87 on Reader Service Card for more information

WANTED:
BY EVERY SHIPPING AND RECEIVING DEPARTMENT!
PORTER 6T HANDKLIP SHEAR CUTTERS
for cutting STEEL STRAPPING and WIRE BINDING

A "Must Tool" for cutting steel strapping and wire binding on cartons, crates, bales, baskets . . . also load holding straps on trucks and freight cars. Pointed end of top cutting jaw hooks easily under tight strapping or wire for a quick clean cut without damaging contents of container. There is a simple adjustment to keep jaws at exactly correct tension always. Ask your mill supply house now! No shipping or receiving room should be without one or more.

H. K. PORTER, INC. Somerville 43, Mass.
Porter Cutters Porter Pruners
PORTER-FERGUSON Autobody and Fender Repair Tools

WHERE CAN I BUY A HAND LIFT TRUCK?
WHAT COMPANY USES THE TRADE NAME "SHOP MULE"?
WHAT'S AN OSCILLATING CONVEYOR?
WHAT ARE SAFE LOADS FOR MONORAIL STRUCTURES?
WHO MAKES PACKAGING MACHINERY?

If you've ever wanted the answers to questions like these in a hurry, and didn't know where to get them—they're all included in the 1952-53 edition of FLOW DIRECTORY.

No material handling man should be without a copy of this 636-page combination reference and buying guide. Actually, it's six volumes combined into a single handy, valuable book and priced at only $6.50.

Order copies from:

THE FLOW DIRECTORY
1240 Ontario St.
Cleveland 13, Ohio

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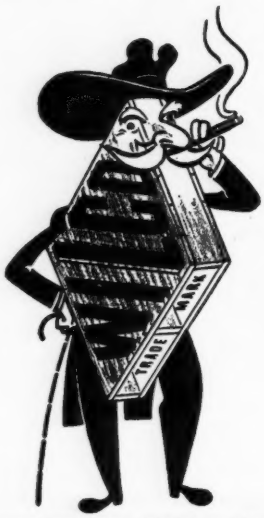
WILCO PALLETS

"A TRADE MARK YOU CAN TRUST"



"WILCO" MEANS BETTER PALLETS
Why not try them in your plant?

WILLIFORD MFG. CO.

Box 6095-F, Buntyn Station
MEMPHIS 11, TENNESSEE

indoors or out, just as it comes from the container. Three steps and the patched floor is ready for use immediately; 1. clean hole to be patched and spread primer supplied; 2. fill in with Permamix; 3. Tamp solidly and dust with cement or floor dust. Resume traffic at once. There is said to be no danger of temperature damage to the patched area. The material comes in 50 lb. net weight drums.

Circle No. 204 on Reader Service Card for more information

Unique Industrial Truck—*Elwell-Parker Electric Co.*

This truck, built by the Elwell-Parker Electric Co. is used to push hog carcasses along an overhead conveyor. It moves from six to 20 carcasses at a time, and is said to save considerable time. The specially designed pushing rack with extended arm permits cutting into a row of carcasses at any desired point. The truck can be adapted to other uses where moving material on overhead conveyors present a problem, it is claimed.

Circle No. 205 on Reader Service Card for more fnformation

GOT A DEAD HORSE IN YOUR PLANT?

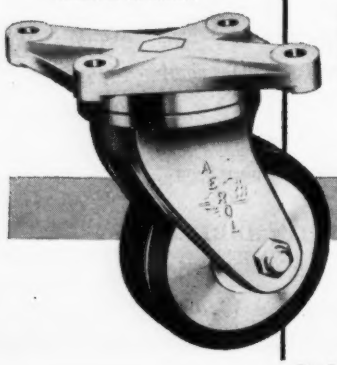
If your materials handling equipment isn't rolling on Aerol wheels and casters, you're pushing a lot of "dead horses" around your plant . . . and, remember this, "dead horses" carry no weight—they *add* to your load.

Specify Aerol, and cut caster assembly weights by 60% over old-fashioned units . . . Greater pay-loads, too!

Equipped with Timken Tapered Roller Bearings, Aerol Wheels guarantee greater rollability . . . with lower maintenance cost, because every Aerol wheel is *lubricated for life* before it leaves the factory. You cut the chance of breakdowns due to excessive loads, too—because Aerol's durable, light weight aluminum wheels withstand stress tests up to 20 times of rated load capacity.

Specify Aerol today—get rid of the "dead horses" in your plant!

Ready to cut maintenance costs for you is the Aerol Standard Duty Wheel and Caster Rig. Wheels available in diameters from 3 inches to 20 inches.



CONCENTRATE ON **aerol**

WRITE FOR CATALOG today—Address inquiries to Aerol Co., Inc., 2424 San Fernando Road, Los Angeles 65, California—Dept. F

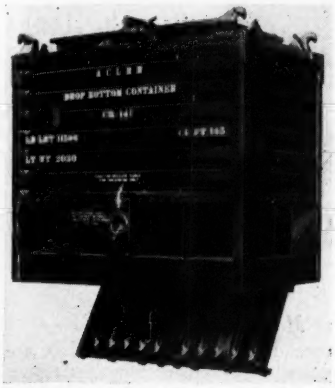
AEROL CO., INC.
2424 SAN FERNANDO ROAD, LOS ANGELES 65, CALIF.

NO WHEEL ROLLS LIKE AN AEROL

Circle No. 90 on Reader Service Card for more information

Drop Bottom Shipping Containers—*Youngstown Steel Door Co.*

A drop bottom container has been developed by Youngstown Steel Door Co. to permit complete and quick discharge of contents. Suitable for both large and small size bulk materials, it is designed to discharge materials like ground fire clay and soda ash without the formation of injurious clouds of dust in the plant. This is done by setting the container on the floor, releasing the discharge door, and slowly raising the container. The container can also be discharged while suspended by means of a line attached to the door release cable. Size is 4′3″ x 7′0″ x 6′5″. Top charging door opening is 2′11″ x 4′11½″ and the bottom discharge door opening is 2′9⅞″ x 5′7¾″. Capacity is 145 cu. ft., and max. load is 16,000 lb.

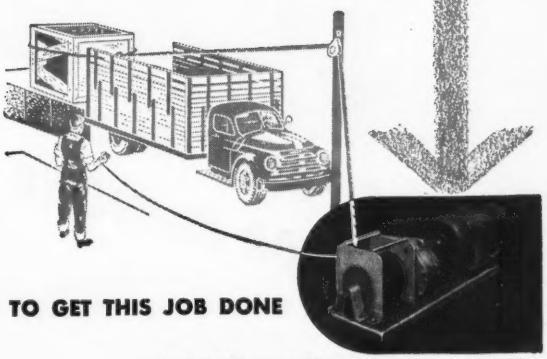


Circle No. 206 on Reader Service Card for more information

(Continued on next page)

Circle No. 91 on Reader Service Card for more information

it takes **PULL**



TO GET THIS JOB DONE

. . . And the STAMPCO TUGGER'S got it . . . instantly available at the flick of a finger. Designed to fit your own special pulling or lifting applications with either manual or pushbutton controls, the TUGGER is yours in a large range of models and capacities . . . at suprisingly low cost.

The TUGGER'S single or three phase motor is electrically reversible, and is equipped with dual voltage, high-torque winding for extra heavy starting loads. Your choice of safe, fast-acting electric solenoid, mechanical, or centrifugal brake.

Find out about the TUGGER today. Write for complete descriptive bulletin.

STAMPCO PRODUCTS

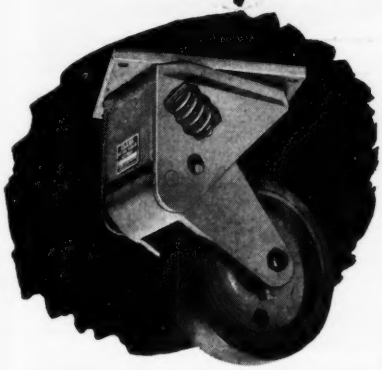
ST. ANTHONY MACHINE PRODUCTS CO.
2426 East Franklin Ave., Minneapolis 6, Minn.

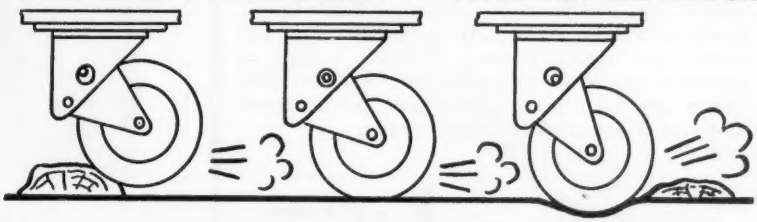
Clark DUOFLEX

THE Only REAL "Knee-Action" CASTER SAVES

LOADS · FLOORS · TIRES · TRUCKS

TOP REMAINS HORIZONTAL • WHEELS ABSORB SHOCK





Engineered to load requirements. Easy installation. Hardened races. Ball bearing swivel. Timken or Hyatt type wheel bearings. Pressure lubrication throughout. Long life under heavy duty.

This new knee-action design maintains wheel to floor contact at all times — cushions the load — prevents floor damage — wheels cannot jump or "fishtail". Tires and wheels of all types. Write to-day for complete information.

Clark

ALL STEEL WELDED TRUCK CO.
ROCKFORD, ILLINOIS

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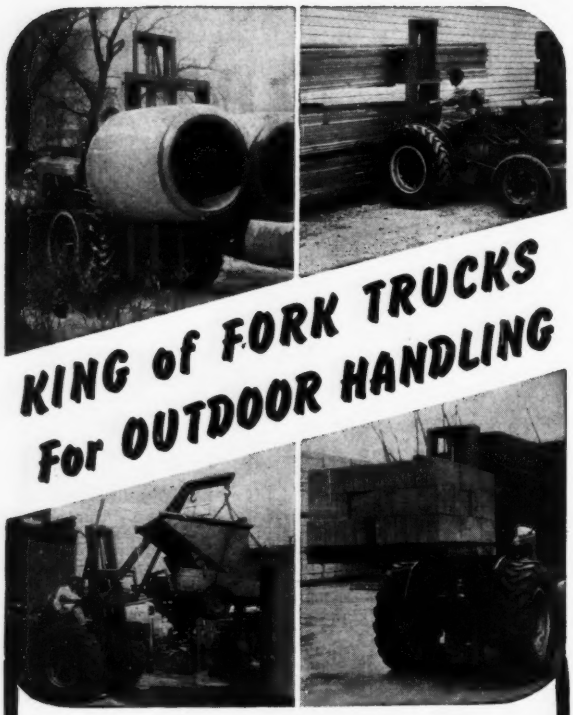


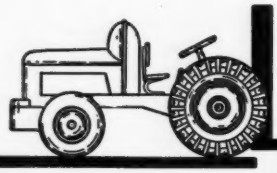
KING of FORK TRUCKS
For OUTDOOR HANDLING

NOW YOU CAN HANDLE HEAVY LOADS "IN THE ROUGH!"

Only Tracto-Lift can handle materials *anywhere,* even on rough, unpaved ground. This extraordinary fork lift truck has over-size pneumatic tires, basic tractor transmission, ample underneath clearance. Makes possible greater traction, roadability and work capacity. Store materials outside on any ground in any weather, with Tracto-Lift!

SPEED HANDLING, CUT COSTS!

Tracto-Lift speeds materials handling! You can handle materials at the higher speeds of industrial tractors and even climb inclines up to 20%. As the load weight is increased, steering ease increases. Maximum maneuverability under all conditions. Tracto-Lift cuts handling costs! First cost is low, operation economical. Tracto-Lift is based on a *standard* industrial tractor; parts and service are available throughout the world. A complete line of versatile attachments is available. Write now for illustrated brochure, full information and name of your nearest dealer.



TRACTO LIFT Company

2011 BALTIMORE
Kansas City 8, Mo.

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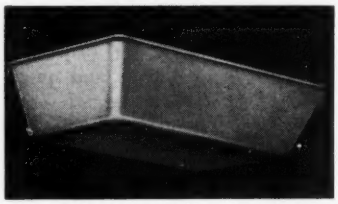
Light Weight Tote Pan—*G. B. Lewis Co.*

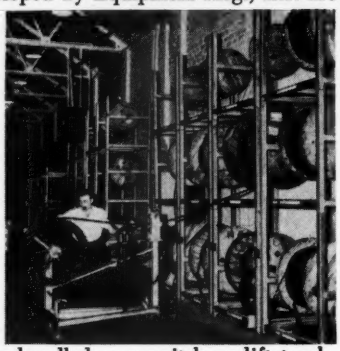


The Lewis Plexton Tote Pan was designed to reduce fatigue of workers through light weight, and yet to be strong enough for general plant use. They are said to be impervious to water, oil and most chemicals. Weight is 4½ lb. A variety of colors are available.

Circle No. 207 on Reader Service Card for more information

Reel Rack—*Equipment Manufacturing, Inc.*

Stacking racks developed by Equipment Mfg., Inc. are said to conserve space and make more efficient the handling of reels of cable, loom, wire, tubing, rope, beading, extruded plastic shapes etc. Reel is placed in the rack at floor level, "U's" provided on the cate the reel axle. cross members lo-



Reel and rack are then handled as a unit by a lift truck.

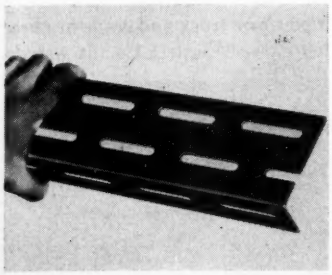
Circle No. 94 on Reader Service Card for more information

Racks are of welded square tube construction with self-aligning nesting feet that make stacking sure and easy. With each reel free to rotate independently, lengths of material can be dispensed readily as needed.

Circle No. 208 on Reader Service Card for more information

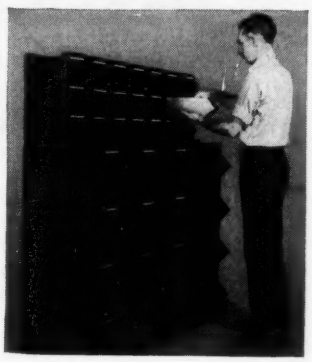
Easily Assembled Shelving—*Acme Steel Co.*

DexAngle, a 10-ft. long, 3x1.5 x .080-in. slotted-leg galvanized steel angle designed for all-purpose industrial fabrication is being manufactured and distributed by the Acme Steel Co. The lengthwise rows of slots in this "industrial erector set" unit permit the rapid assembly by bolting of shelving, bins, scaffolding, ladders, assembly tables, motor and machinery mounts, racks, partitions, conveyor-line structures, benches, skids, and hand rails as well as a host of other plant equipment. A hacksaw and wrench are said to be the only tools needed for assembly. When used as uprights in lengths up to 5½ ft., the angles will individually support loads up to 1200



REDUCE HANDLING
of Tools, Parts and Materials

Because Stackbins are portable containers — not fixtures — tools, parts and materials can be carried to departments, from machine to machine, or held in stockrooms without being transferred from one container to another. Stored in Stackracks, any Stackbin is instantly accessible when its contents are needed—without disturbing any other bin. *Stackbins*—individual hopper-fronted stacking bins, slide like drawers in *Stackracks*—individual units which lock together to form racks of any size, shape or capacity.



STACKBINS IN STACKRACKS

Manufactured and sold in Canada exclusively by Wickware-Stackbin, Ltd., Ottawa

Write Stackbin Corp., 1133 Main St., Pawtucket, R. I.

STACKBIN SYSTEM

"Stacked and Still Accessible"

Circle No. 95 on Reader Service Card for more information

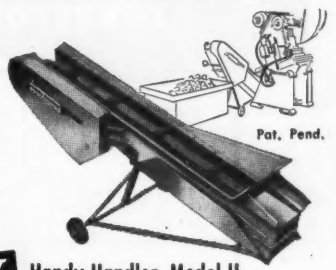
Big MAN-HOUR Savings

with Belt portable handling equipment, built especially for a variety of industrial jobs!

Stop your material-handling profit leaks by using lightweight, portable and inexpensive Belt conveyor equipment. Reduce the time and cost of scoop-shovel jobs, stacking and storing, loading and unloading packaged goods and bulk materials.

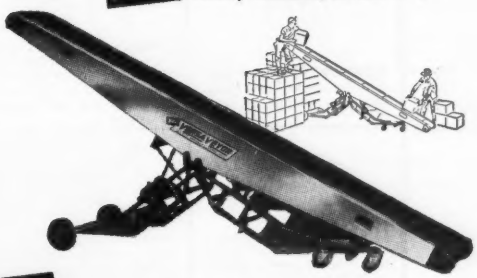
WRITE TODAY FOR PRICES AND LITERATURE!

Lengths—6, 8 or 10 ft. • height of undercarriage easily adjustable • will handle 100 lb. distributed load, 25 lb. maximum unit load • aircraft-quality, aluminum-alloy frame construction • 50 f.p.m. chain speed.



Pat. Pend.

BELT Handy-Handler, Model U



BELT Versaveyor, Bag and Box Handler

Overall lengths—13, 15, 17 or 19 ft. • 18-in. bed • can be operated with or without either or both undercarriages • 60 f.p.m. belt speed • aluminum-alloy frame • 600 lb. distributed load • 150 lb. unit load.

BELT

Model S

Handy-Handler

Standard 16-ft. length; also has 4-ft. extension section (special lengths available) • tough, aluminum-alloy construction • weighs 97 lbs. without the easily detachable power unit • can be used with or without dolly.

Pat. Pend.

BELT THE BELT CORPORATION

7406 STAHL ROAD ORIENT, OHIO

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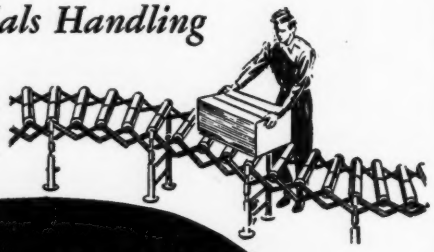
Quick and Convenient Materials Handling

PORTABLE
FLEXIBLE
ECONOMICAL



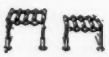
fmc ACCORDION GRAVITY CONVEYOR

Makes Box Handling Easy

EXTENDS to lengths required, up to a maximum of 9½ feet.

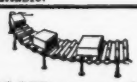
BENDS to avoid obstructions or to conform to loading requirements.

CONTRACTS to 3½ feet. Can be turned over and rolled to storage by one man.



RAISES or **LOWERS** from a minimum height of 20½ inches to a maximum height of 28 inches. Legs in special lengths available.

CURVES around corners or posts. Split rollers keep boxes on conveyor without side rails.



RUGGED construction. Steel Roller staggered wheel or side wheel available. Aluminum type models subject to availability of materials.

fmc CLAMP TRUCKS

For Quick and Easy Handling of
Boxes, Crates, Baskets and Lugs

Clamp arms with replaceable jaw tips grip containers firmly. Foot pedal controls opening and closing of clamp arms. Rugged construction, equipped with rubber-tired ball-bearing wheels. Models available for various types of box handling.

fmc FOOD MACHINERY AND CHEMICAL CORPORATION
PACKING EQUIPMENT DIVISION
RIVERSIDE, CALIFORNIA

NM-26

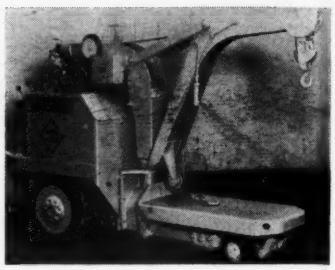
Circle No. 97 on Reader Service Card for more information

lb. Horizontally, concentrated loads from 90 to 3800 lb. can be supported depending upon distance between supports and the section construction.

Circle No. 209 on Reader Service Card for more information

Combination Platform Truck and Crane—*Elwell-Parker Electric Co.*

A combination low lift platform truck and crane has been announced by The Elwell-Parker Electric Co. It was designed to solve plant maintenance problems but reportedly can be used to advantage for handling production materials which do not lend themselves to more conventional handling techniques. The truck has a self-loading platform designed to lift and transport skids, and is equipped with a powered winch for pulling heavy loads on or off the platform. Standard capacity is 4,000 lb. Boom which swivels 180°, permits hoisting loads weighing up to 2,000 lb. Overall length of the truck is 134 in.,



TRAFFIC NEVER STOPS

when you repair your floors with PERMAMIX.

Easy to apply—sets instantly—long wearing for year around use indoors or out—WILL NOT FREEZE—can be stored indefinitely and used in any temperature—lowers maintenance costs amazingly.

Here's all you do: Clean hole in any type floor, spread primer supplied in drum, fill in with PERMAMIX, tamp and dust with cement or floor dust, resume traffic immediately. It's that easy, for PERMAMIX feather edges and no cutting or chipping is required. No skilled labor is necessary, you need no special equipment, you have no mixing, waiting or production delays when you repair or patch your floors the easy, fast PERMAMIX way. Comes in handy, durable 50 lb. net weight drums.

Write or call for full details

PERMA Mix

PERMAMIX CORPORATION
226 N. La Salle St. Cent. 6-1785 Chicago 1, Illinois

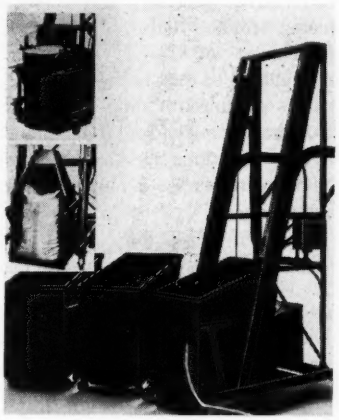
Circle No. 98 on Reader Service Card for more information

width is 41 in., and height is 72 in. Maximum hook height is 57 in. with an outreach of 61 in. Platform height is 10 7/16 in. with a lift of 5¾ in. Platform measures 26½ in. wide by 53 in. long.

Circle No. 210 on Reader Service Card for more information

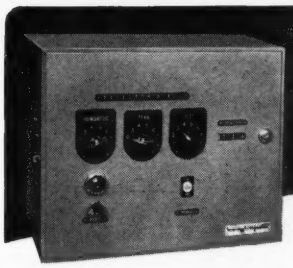
Container and Bag Dumper—*Colson Equipment & Supply Co.*

Any free flowing material in bags, bulk or drums can be lifted and dumped by the Cesco Dumper shown here. It can be equipped with a variety of skips and loaders including bag dumpers, drum dumpers, dust control types and many others. Results, according to the manufacturer, Colson Equipment & Supply Co., are quicker deliveries, and lower freight costs. Lifting capacity is 1500 lb. at a rate up to 150,000 lb. per hr. Standard dumping heights are from 5 to 12 ft.



Circle No. 211 on Reader Service Card for more information

Circle No. 100 on Reader Service Card for more information

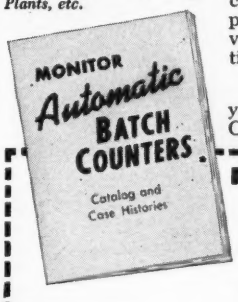


Counts Batches Automatically

Amazingly Simple
Completely Dependable

Saves Labor — Avoids Production Bottlenecks
Eliminates Element of Human Error
Stops over-count losses — under-count complaints

Used for years in Steel and Paper Mills; Factories and Breweries; Can, Carton, Bottle Cap and Printing Plants, etc.

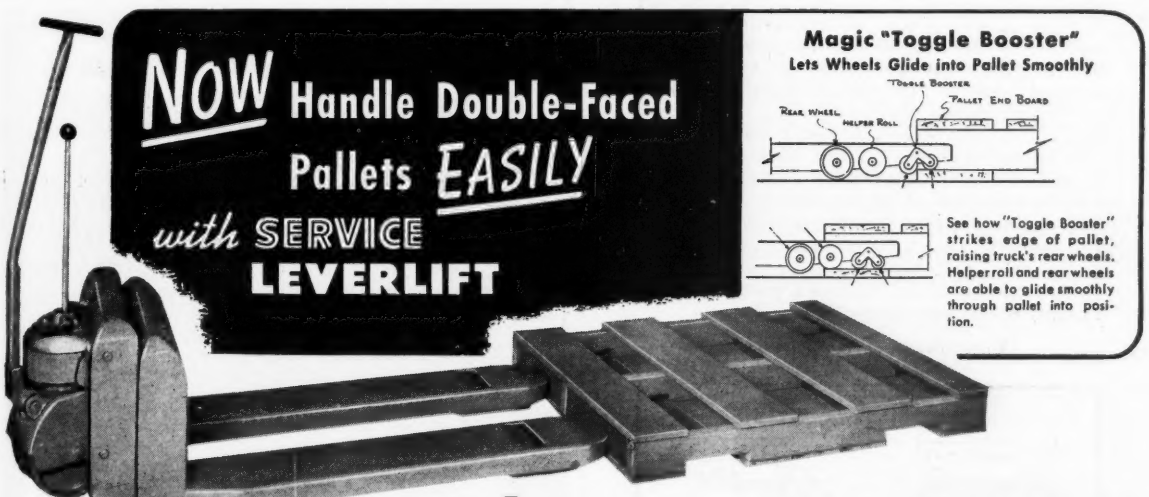


• Counts any desired quantity of parts, pieces, sheets, etc. • Measures any desired length of wire, paper, cloth, tape. • Automatically controls packaging, diverting and marking devices—without slowing down production or missing a single count.

Extremely adaptable. Tell us what you want to accomplish or send for Catalog and Case histories.

PRODUCTION INSTRUMENT COMPANY
718 W. Jackson Blvd., Chicago 6, Ill.
Send Catalog and Case Histories of Monitor Batch Counter Applications.

Name_____
Company_____ Title_____
Street_____ City_____ Zone____ State_____
MB-5



Magic "Toggle Booster"
Lets Wheels Glide into Pallet Smoothly

See how "Toggle Booster" strikes edge of pallet, raising truck's rear wheels. Helper roll and rear wheels are able to glide smoothly through pallet into position.

Easier to Operate

- **Every stroke a power stroke with short-stroke vertical pump handle.**
- **Pulls and steers easily under load, ten inch front wheels.**
- **Pull handle stays vertical when not in use.**
- **Hand release valve gives fast or slow lowering.**
- **Stability in operation through torque equalizer.**
- **Tines lift load *toward* operator, away from any wall.**

Here is the only pallet truck with tines which can enter your double faced pallets with no jockeying. Magic "Toggle Booster" rollers "float" truck frame and wheels over bottom face of pallet so gently that even an empty pallet isn't jarred out of position. Leverlift enables you to use *all* floor space where it's too crowded to work power-operated equipment. Here is the easiest and quickest hand-operated way to move palletized loads.

Write for Detailed Specifications Today

SERVICE CASTER & TRUCK CORP.

EXECUTIVE OFFICES: ALBION, MICHIGAN • Plants at Albion, Michigan and Sommerville 43, Mass.
SEE YOUR CLASSIFIED TELEPHONE DIRECTORY FOR NEAREST DISTRIBUTOR

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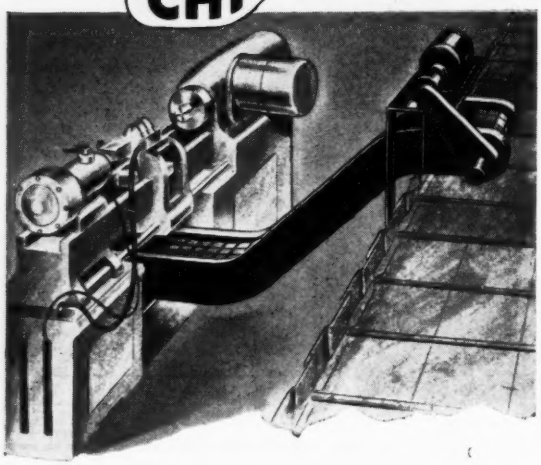
Automatic Scrap Removal... WITH A CHIP-TOTE CONVEYOR



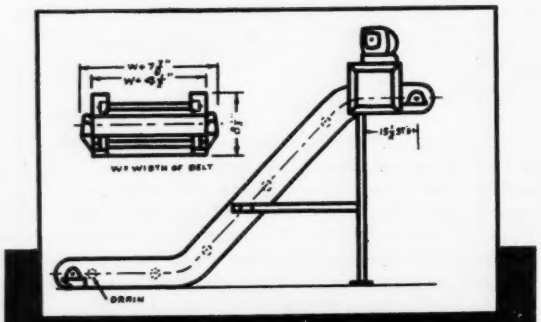
Continuous removal of chips, turnings and borings from operating automatic or multiple-spindle machines is now possible with the new MAY-FRAN CHIP-TOTE. Eliminating shut-down for manual scrap removal, it permits maximum production to be gained from equipment and manpower.

Hot, wet or dry scrap is funneled onto the CHIP-TOTE hinged-steel conveyor belt, carried horizontally until clear of the machine's working mechanism, and then transported up an incline for discharge into tote box or carry-off conveyor system.

The CHIP-TOTE can be furnished to fit practically any machine tool. Its speed of operation can be synchronized with the machine's metal removing capacity and rate of coolant flow.

Write today for further information.

474 MF

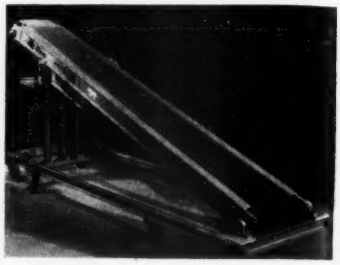


MAY-FRAN ENGINEERING, INC.

1691 Clarkstone Road • Cleveland 12, Ohio

Circle No. 101 on Reader Service Card for more information

Portable Loading Dock—*Speedways Conveyors, Inc.*



Companies having no loading docks for loading and unloading trucks, freight cars, vans and other carriers will be interested in the hydraulic portable loading dock recently introduced by Speedways, Inc. The hydraulic mechanism provides adjustment of discharge end to fit it to the exact height of the carrier. Low end is designed to simplify transfer of boxes, crates, etc. from hand trucks. Said to be easily portable, it can be locked into position. Designed to give proper balance when heavy merchandise is moved and to withstand heavy loading shocks.

Circle No. 212 on Reader Service Card for more information

Straps—*Gordon D. Brown & Assoc.*

Webbing straps equipped with instant-set, instant-release buckle grips have been developed by Gordon D. Brown & Associates. The straps are used to hold bulky equipment on dollies, hold odd-shaped items during as-

ARE YOUR ELECTRIC TRUCKS GUILTY OF "4 O'clock Letdown?"
READY-POWER DRIVE
for Full Efficiency ALL THE TIME!
Only Ready-Power gives your electric trucks full efficiency for every minute of every hour . . . all day long. Ready-Power-equipped trucks are so easy to operate, drivers are more efficient, too. Unlimited power plus alert drivers add up to more ton-miles per hour.
CONTINUOUS-DUTY POWER UNITS
Your Truck Is No Better Than Its Power
The READY-POWER Co.
3838 Grand River Ave., Detroit 8, Michigan
Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

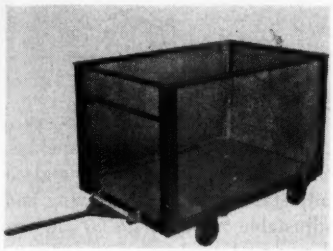
Circle No. 102 on Reader Service Card for more information

sembly operations and for a raft of other tieing jobs. They can be set in a jiffy to any degree of tension, released in seconds when they have to be. Once set, the buckle prevents slippage or backlash. Strap assemblies are sold in 1", 1½" and 2" widths.

Circle No. 213 on Reader Service Card for more information

Fixed Path Trailer—*Towsley Trucks, Inc.*

This expanded metal trailer-type box truck designed primarily for handling laundry in institutions, may be useful in many industrial applications too. Towing trains of six or more trailers through corridors having many right angles and S-curves, requires that trucks trail in a fixed path. This is accomplished by a special arrangement and spacing of the coupling tongues in relation to the front and rear casters. Locking device holds tongue upright when truck is hand operated as a single unit. It is designed and manufactured by Towsley Trucks Inc.



Circle No. 214 on Reader Service Card for more information

(Continued on next page)

One-Man 20-Second
BOX CAR DOOR
OPENER!

Over 10,000 Nolan 1-man Car Door Openers now saving time . . . saving money . . . saving lives, for all types of businesses needing quick, positive box car door opening and closing. *Guaranteed to open the most stubborn, balky box car door in 20 seconds or less!*

A few quick pulls on the NOLAN anchor chain does the job by one man. No gangs needed. No mangled limbs or loss of life from jammed or falling doors. The NOLAN saves its low initial cost in its first hour of operation. FREE CATALOG gives complete description. Order one or more NOLAN Model H Car Door Openers to meet all your needs.

$29.50 F.O.B. BOWERSTON

THE NOLAN COMPANY • 110 Pennsylvania St. • BOWERSTON, OHIO

Circle No. 103 on Reader Service Card for more information

PHILLIPS
TRAIL-SKID*

TRANSPORT AND MANEUVER *LONG LOADS* IN CONFINED SPACES

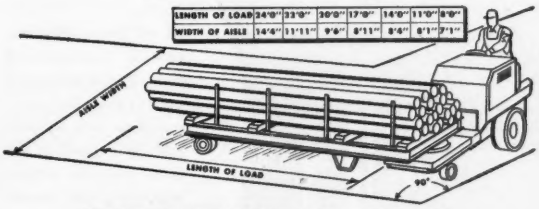
10,000 POUND CAPACITY

Towed by fork or platform lift truck, the Trail-Skid provides exceptional versatility at a cost substantially less than that of a conventional trailer. Although ideal for transporting palletized loads, it is outstanding for use in handling long length loads in confined spaces—such as turning corners at minimum width intersecting aisles. In operation, the lift truck engages the coupling mechanism mounted on the articulated turntable, lifts the skid legs free of the ground and moves the unit on its rear wheels. Depending on the load, the Trail-Skid can be used with or without stakes.

*Reg. U. S. Patent Office—Patent No. 2,439,232

Write for Bulletin E-41.

LENGTH OF LOAD	24'0"	22'0"	20'0"	17'0"	14'0"	11'0"	8'0"
WIDTH OF AISLE	14'4"	13'11"	9'6"	8'11"	8'4"	8'1"	7'1"



PERFORMANCE DATA: A Trail-Skid with a 24' load can make a 90° turn in aisles only 14'4" wide. See table above for other details.

MANUFACTURERS SINCE 1863 **PHILLIPS** MINE AND MILL SUPPLY COMPANY PITTSBURGH, PA.

MATERIALS HANDLING EQUIPMENT

2300 JANE STREET • PITTSBURGH 3, PA.

Circle No. 104 on Reader Service Card for more information

Well Stacked!

Write for our catalog of materials handling equipment.

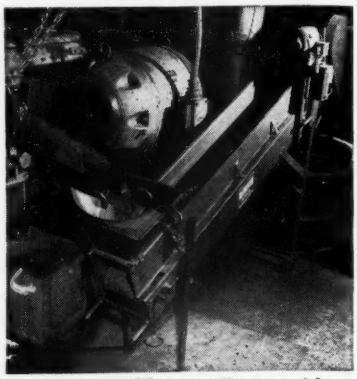
Palletized goods is well stacked when it's stacked on strong, flexible, space conserving E. M. I. prefabricated pallet racks. They save handling time by permitting removal of low level material without disturbing that above.

EQUIPMENT MFG. INC.

21552 Hoover Road
Detroit 5, Michigan

Circle No. 105 on Reader Service Card for more information

Press-Helper—*Metzgar Co.*



The Press-Helper manufactured by the Metzgar Co. is said to solve the handling problem when parts must make several passes through a machine, and when space is at a premium. Although the conveyor is ordinarily a specialized item built to order for each specific job to convey parts or waste from machine operations, many standard parts go into its make up. The one illustrated has a 6′ x 12″ R.T. Belt without cleats, operating over standard 6″ drum pulleys with adjustable tension. Receiving and discharge heights are adjustable from 14″ to 60″ in this model which is mounted on a portable base.

Circle No. 215 on Reader Service Card for more information

Trimmer—*Stephens- Adamson Mfg. Co.*

Loading time on ships is reportedly cut in half by the S-A ship trimmer. All types of bulk material are loaded uniformly and rapidly into holds at speeds up to 1500 tons per hour depending on the type of material handled.

Save time! Prevent accidents!

LIFT AND DUMP MECHANICALLY

BAGS
BARRELS
DRUMS
BOXES

REDUCE HANDLING COSTS with a Cesco Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California

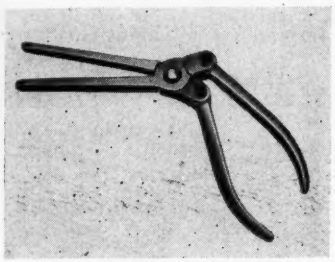
Circle No. 106 on Reader Service Card for more information

It is available in either the fixed type for permanent mounting on a vertical chute at dockside, or in deck type which can be cable suspended from a ship's rigging.

Circle No. 216 on Reader Service Card for more information

Magnesium Safety Tongs—*Magline, Inc.*

Fully adjustable handles on these magnesium safety tongs are said to provide greater ease and flexibility for press and shear feeding operations. They adjust instantly to any desired position and tension at the points of adjustment is automatically maintained. Constructed of specially alloyed magnesium, the tongs are designed to crush if accidentally caught within the die opening, thus preventing damage to the die.



Circle No. 217 on Reader Service Card for more information

Rubber-Cushioned Products—*Automatic Rubber Co., Inc.*

Rubber cushioned handling baskets, pans, spacers, chutes, hooks, and racks can bring you quick savings

for FLEXIBILITY in material HANDLING

SAUERMAN POWER SCRAPER

200,000 tons of crushed stone is stored and reclaimed annually at metallurgical plant by Sauerman scraper system operated by one man.

With its long reach and movable tail block, the Sauerman Scraper quickly covers a large area . . . digs, hauls and dumps any kind of earth or bulk material in a continuous process. The operator can handle large loads faster using less power, size for size, than any other type of equipment that can cover the same area. First cost is low—upkeep is simple.

FREE CATALOG

Write today for Booklet describing many typical applications.

SAUERMAN BROS. Inc.

540 S. Clinton St., Chicago 7, Ill.

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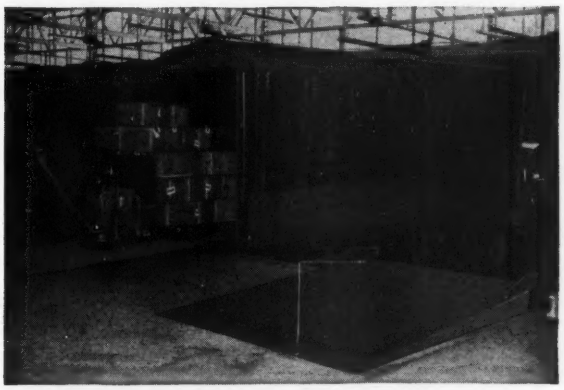
Eliminates Loose Dock Plates — Reduces Accidents and Materials Damage



ROWE ADJUST-A-DOCKS CUT DOCK HANDLING TIME 67%

Costly time and labor become profit when you install Rowe Adjust-A-Docks. Shipments are moved directly into carriers by fork or lift trucks, eliminating costly hand loading. One Adjust-A-Dock triples ordinary dock capacity. Damage is cut. Hazardous loose dock plates are eliminated. Loss time accidents reduced. Rowe Adjust-A-Docks hydraulically raise or lower to truck-bed height. Easily installed, Rowe Adjust-A-Docks pay for themselves as quickly as 30 days.

ADJUST-A-DOCKS RAISE OR LOWER TO MEET THE LEVEL OF ANY CARRIER

RAISED

LOWERED

WRITE TODAY for free illustrated Bulletin showing typical installations

ROWE METHODS, INC.

2534-C Detroit Ave., Cleveland 13, Ohio

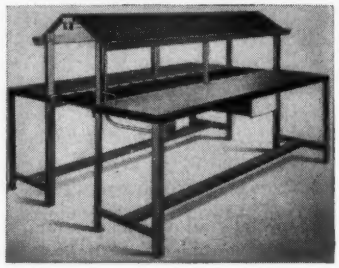
Circle No. 108 on Reader Service Card for more information

by eliminating one source of damage to fragile parts. Automotive Rubber Co. engineers and makes handling equipment for any requirement. Product control may be effected with rubber or with synthetic where unusual conditions are to be met.

Circle No. 218 on Reader Service Card for more information

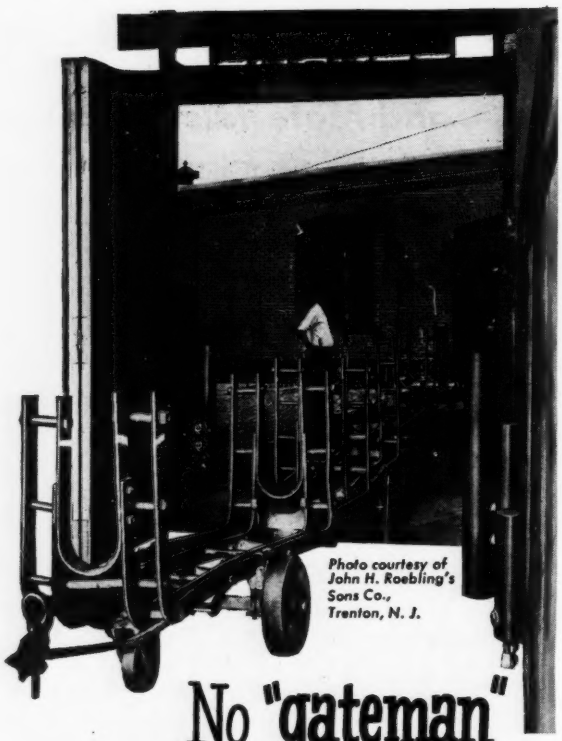
Conveyor-Inspection Table—*Samuel Olson Mfg. Co., Inc.*

Ideal conditions for inspection with minimum effort in moving parts before and after inspection are said to be provided by these tables. The manufacturer, Samuel Olson Mfg. Co., Inc., reports that the unit consists of two inspection tables with a roller conveyor between.



Fluorescent lights are mounted over the conveyor in a canopy-like structure that also serves as a shelf for rejected parts, tools or drawings. Parts for inspection are brought to the tables, usually in tote pans, on caster trucks which have roller beds and are rolled onto the conveyor without lifting. Units may be set end to end for inspection line of any length.

Circle No. 219 on Reader Service Card for more information



No "gateman" needed for this train...

As this train of cable carriers approaches, the door slides and folds back out of the way—actuated automatically by Stanley Magic Door Controls. A beam of light is intercepted by the trucks—the door remaining open as long as the "train" passes through the opening.

This is only one of a wide variety of door control arrangements available with Stanley Magic Door Equipment. Doors are operated to swing or slide together or independently—controlled by the "Magic Eye" or a pull cord.

In hundreds of industrial plants, Stanley Door Controls are helping to cut materials handling costs, speed production, and make important savings in heating and air-conditioning costs. Let us send a representative to show you how this modern equipment can be applied to your own doors.

STANLEY DOOR CONTROLS "The Magic Door"

Reg. U.S. Pat. Off.

COMPLETELY AUTOMATIC DOOR CONTROLS FOR SWINGING, SLIDING OR FOLDING DOORS

The Stanley Works, Magic Door Division
3014 Lake St., New Britain, Connecticut

☐ Send full information on Stanley Magic Doors. ☐ Have your representative call.

Your Name.....

Firm Name.....

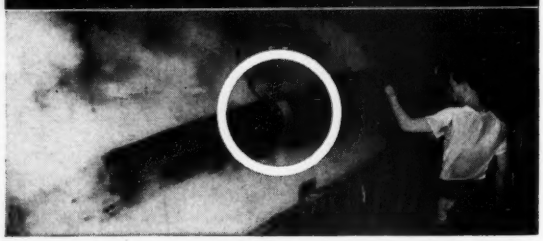
Street.....

City.....State.....

HARDWARE • TOOLS • ELECTRIC TOOLS • STEEL STRAPPING • STEEL

Circle No. 109 on Reader Service Card for more information

LIFT-MOVE-PROCESS



with GRIPPER Woven Wire Slings

LIFT light tubing or heavy, bulky machinery faster, easier, safer with non-tangling, non-kinking Gripper slings. Broad flat body (NOT a single strand or series of links) means greater bearing surface, assures load stability.

MOVE vertically or horizontally without fear of sudden breaks. Gripper slings will not snap. Sharp edged loads will not cut sling body. Handle semi-polished stock without scratching, tube stock without crushing.

PROCESS through pickling tanks without harm to sling. All-metal construction impervious to corrosion or moisture.

SEE YOUR JOBBER TODAY. Gripper slings are sold through mill, supply, materials handling and safety equipment houses. WRITE for free literature.

The Cambridge Wire Cloth Co.

WIRE CLOTH | METAL CONVEYOR BELTS | SPECIAL METAL FABRICATIONS

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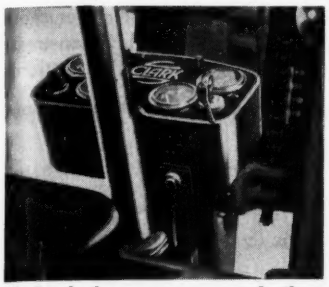
Cambridge 4, Md.

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

Circle No. 110 on Reader Service Card for more information

Re-Designed Instrument Panel—*Clark Equipment Co.*

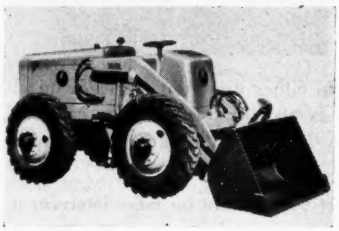
A newly designed instrument panel is now included as standard equipment on all Clark Equipment Co. gas powered fork trucks. The panel is attached to the steering column directly in front of the driver insuring excellent visibility at all times, it is claimed. Panel includes fuel, temperature and oil-pressure gauges, ammeter, ignition switch, horn and Mico brake control fuses and starter button.



Circle No. 220 on Reader Service Card for more information

One-Cubic Yard Tractor-Shovel—*Frank G. Hough Co.*

A smaller version of the 1½ yd. Hough Payloader was recently made available by the Frank G. Hough Co. It has a one-cubic yard bucket with 60 hp diesel or 54 hp gasoline power optional. An outstanding feature according to the manufacturer is its four-wheel drive. It has pneumatic



Circle No. 113 on Reader Service Card for more information

Extend your conveyor lines where never before possible, to your truck platforms, shipping rooms, warehouses, loading ramps, etc . . . as your ever-changing conveyor problems require new conveyor set-ups. FLEX-CO Roller Conveyors are demountable to 8 inch sections, so that they can easily be carried from one location to another, and added to as needed. Corners, posts, obstructions, etc. are no longer a problem in keeping your production lines operating, because you simply convey around them with FLEX-CO Portable, Adjustable, Flexible, Roller Conveyors . . . that are designed for those every day changing conveyor problems.

Write! today for complete details.

BERLIN CHAPMAN CO. BERLIN, WIS. SINCE 1909

WHERE CAN I BUY A HAND LIFT TRUCK?
WHAT COMPANY USES THE TRADE NAME "SHOP MULE"?
WHAT'S AN OSCILLATING CONVEYOR?
WHAT ARE SAFE LOADS FOR MONORAIL STRUCTURES?
WHO MAKES PACKAGING MACHINERY?

If you've ever wanted the answers to questions like these in a hurry, and didn't know where to get them—they're all included in the 1952-53 edition of FLOW DIRECTORY.

No material handling man should be without a copy of this 636-page combination reference and buying guide. Actually, it's six volumes combined into a single handy, valuable book—and priced at only $6.50.

Order copies from:

THE FLOW DIRECTORY
1240 Ontario St.
Cleveland 13, Ohio

PRODUCTION PICK-UP:

ELECTROLIFT
worm drive hoist

Watch your production pick up with these time-saving, manpower-saving hoists. You can move materials faster, smoother, quieter with Electro-Lift.

Wide variety of one-man models, for safe movement of loads up to 6 tons. Available with push-button control for pin-point accuracy.

For further features write for Bulletin 36, or consult your ElectroLift representative listed in telephone directory.

ELECTROLIFT

ELECTROLIFT, INC., 30 CHURCH ST., NEW YORK 7, N. Y.

Circle No. 112 on Reader Service Card for more information

Circle No. 114 on Reader Service Card for more information

BUSCHMAN CONVEYOR CUTS ASSEMBLY COSTS 50%

for automotive transmission builder

More than a year's use shows that a Buschman Roller Conveyor has cut approximately 50% in assembly costs for a noted transmission manufacturer. "Very satisfied with the installation," the user reports that the conveyor is flexible, permits time-saving straight line assembly never possible before.

There's a Buschman Conveyor to move practically any part or product faster, easier and at lower cost. Find out why users in every industry say Buschman Conveyors are "Better Built . . . A Better Buy." Write for literature: Catalog 60—Roller Conveyors or Catalog 400—Complete Conveyor Line.

The E. W. BUSCHMAN Co.
4450 Clifton Avenue
Cincinnati 32, Ohio

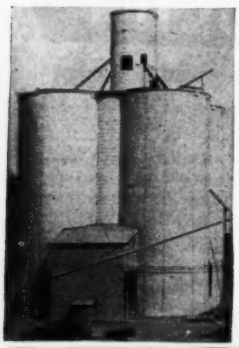
PRODUCE MORE FOR LESS on Buschman Conveyors

used available space—
UP IN THE AIR!

When a company in northwestern Ohio needed more than the 65,000 bu. storage space they already had in eight Neff & Fry bins, they talked to us about more bins.

Adjacent ground could not be obtained for lateral expansion. So the alternative was to build *tall* bins. The four shown in the photo are 70′ high. They provide additional storage for almost 200,000 bu. of grain.

On top of the four big bins is a 16′ x 30′ machinery house, the roof of which is 100′ up in the air where space is always available—and free!



Maybe *room upwards* will solve your problem for handling and storing flowable bulk materials.

Be sure to read our interesting folder, "Bins with the Strength of Pillars." Write, wire, or phone for a copy.

THE NEFF & FRY CO.
110 Elm St. • Camden, Ohio

SUPER-CONCRETE STAVE STORAGE BINS ◀ NEFF & FRY

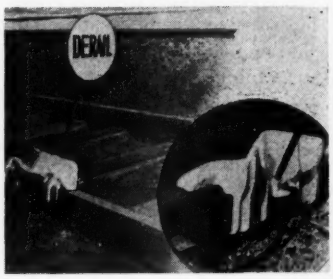
Circle No. 115 on Reader Service Card for more information

tires, same size all around for increased traction and flotation to make it work effectively in sand, mud and snow, and to travel on pavements without injuring the surface. Rear wheel steer with power booster plus short wheel base makes it easy to operate and highly maneuverable, it is reported. It has four speeds in both directions.

Circle No. 222 on Reader Service Card for more information

Portable Derail Unit—*Nolan Co.*

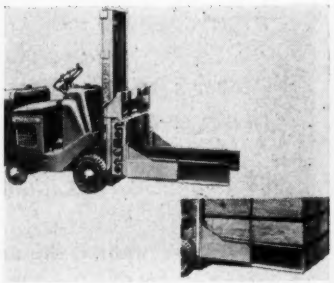
A portable derail unit for temporary derailing service and safety has been announced by the Nolan Co. The unit is recommended for use wherever workers may be endangered by wild cars, switching cars, or uncontrolled and unsuspected car movements in rail yards, spurs, etc. Derailment is accomplished in either direction, on right or left hand rail. No spiking is necessary as a wedge construction securely locks the derails to the rail. Each unit is complete with flag.



Circle No. 223 on Reader Service Card for more information

Box Handling Attachment—*Towmotor Corp.*

A fork-lift truck development engineered especially for the fruit warehousing industry has been released by Towmotor Corp. Called the Towmotor Hydraulic Fruit Box Clamp, the unit has been tested with reportedly considerable success in eliminating costly, time-consuming manual handling. Also, spoilage caused by delay in getting fresh fruit into cold storage has been reduced. It is said to solve the age-old problem caused by a great variance in size of cold storage units.



Circle No. 224 on Reader Service Card for more information

Pneumatic Scale—*Fluid Controls Co.*

Fluid Controls Co. has announced a completely pneumatic scale for either batch weighing or continuous process control. It accurately converts a variable force or weight into an easily measured pneumatic signal. It will indicate record, or control weight or force through standard instruments in the manner commonly applied to temperature, flow, pressure, and

Circle No. 225 on Reader Service Card for more information

level problems. A unit capable of weighing up to 10,000 lb. occupies less than one cubic ft. of space. Sizes are available to weigh up to 40 tons directly and higher on special order.

Circle No. 226 on Reader Service, Card for more information

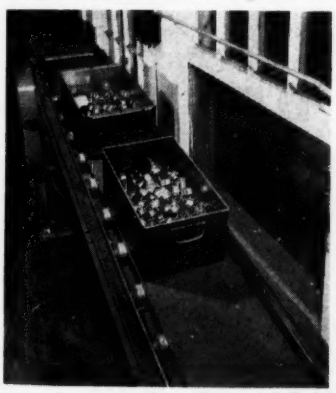
Rugged Steel Roadway—*Irving Subway Grating Co.*

A steel roadway for loading areas, said to require little or no maintenance is being offered to industrial plants by the Irving Subway Grating Co. It is made of open mesh steel grating with a 3½ in. spacing between bars. Roadways already in use have remained solid and efficient even when laid on otherwise hard to pave filled-in ground. According to the manufacturer, even the heaviest cranes and tractors have no damaging effect to the roadway.

Circle No. 227 on Reader Service Card for more information

Acid-Resistant Belting—*Imperial Belting Co.*

An acid-resistant belting has been developed for use in stamping, shearing and scrap handling or other operations involving exposure to cutting oils and similar compounds with acid content. Called Imperial Rexall 620-A belting, it is constructed of 37½ ounce tight woven silver duck, double stitched with innerlocking stitches to permanently prevent ply separation. Imperial Belting Co. further reports that impregnation with special compounds makes the belt acid-resistant and produces a smooth, hard low-friction surface that is ideal for deflection and slider- bed service.



Circle No. 228 on Reader Service Card for more information

Plastic Protective Coating—*Samuel Moore & Co.*

Carbon steel conveyor rollers can be rendered impervious to the effects of moisture, salt, acids, alkalis or other corrosive atmospheres with Dekoron plastic armor coating. The manufacturer also makes plastic armored conveyor

Circle No. 119 on Reader Service Card for more information

HORIZONTAL POWER . . .

. . . where Belt Surface Conveyors can't stand abuse of heavy metals, sharp corners or rough edges, Metzgar "Live Roller" units provide an all-metal, powered bearing surface. May be used as power booster in gravity line. Work can be slowed or held without stopping machine.

Furnished portable or permanent mounted. Choice of one to five rollers per foot. Lengths to suit. Ball bearing throughout. Gearmotor AC or DC drive.

4 STOCK SIZES
11½" - 15"
18" - 24"
WIDTHS

ASK FOR FOLDER NO. 1249

METZGAR CO.

MFGRS. OF WHEEL & ROLLER GRAVITY & LIVE ROLLER CONVEYORS • POWER BELT CONVEYORS • SWITCHES • ACCESSORIES • REEL DOLLIES & END-WOOD WHEELS.

METZGAR CONVEYORS

423 Douglas N. W.

GRAND RAPIDS 4, MICH.

CRANE WHEELS
AND
WHEEL ASSEMBLIES
INSTALL THESE WHEEL ASSEMBLIES complete with axles, bearings, drive gears, grease fittings and all necessary parts for a complete installation. There are sizes, types, and styles of mounting to suit every requirement.
DOUBLE FLANGED WHEELS range in standard tread diameters from 7½" to 24"; SINGLE FLANGED WHEELS from 4" to 8". Wheels are available unmounted or in completely assembled units.
WRITE FOR CATALOG
Complete line of Downs Crane Wheels and Assemblies are illustrated and described in new Catalog No. 3540. Specifications included. Write today!

DOWNS CRANE & HOIST CO.

MECHANICAL ENGINEERS

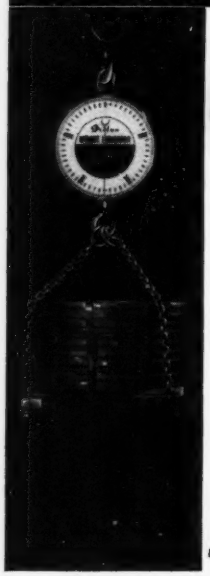
540 W. VERNON AVENUE
LOS ANGELES 37, CALIF.

Electric Cranes • Hand Cranes • Jib Cranes • Sheaves • Sheave Blocks
Plate Grips • Plate Hooks • Crane Trolley Hoists • Crane Wheels • Crane End Truck Units • Jib Crane Fittings • Automatic Mechanical Load Brake Crane Hook Blocks

Circle No. 117 on Reader Service Card for more information

Circle No. 118 on Reader Service Card for more information

WEIGH MATERIALS ON THE SPOT
SAVE UP TO 22% ON LABOR COSTS



Compact
Low-Cost
DILLON
Weight Indicator

Picking materials up, moving them to a scale, setting them down and then picking them up again means *double* handling and greatly increased operational costs. With the DILLON Weight Indicator, loads are checked *on the spot* the instant they are lifted. Accuracy is guaranteed to be within ONE division or less at any point on the dial. Adjustable for large tare loads. 16" dia. dial. Swivel hook. Accidental overload and shock protected. 8 capacities from 0-250 pounds up to 0-20,000 pounds. Portable—weather-proof—dust-proof. Each unit checked with certified dead weights. Extreme utility at LOW cost!

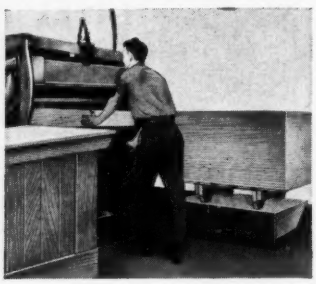
Write today for illustrated, descriptive literature

W. C. DILLON & CO., INC.

1421-Q S. CIRCLE AVE., FORREST PARK, ILLINOIS

Globe Production Lifts

Speed machine-feeding jobs; reduce waste-motion, lessen fatigue



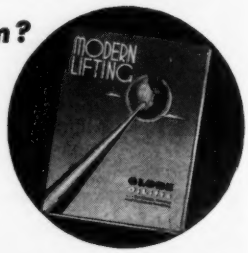
There is a Globe Production Lift for almost any job from raising paper stock to a cutter to feeding sheet steel into a brake or shears... from feeding tumbling barrels to positioning men and equipment for welding operations.

Globe Production Lifts save time, waste-motion, and strain—the OiLIFT powered platform "inches" upward so that material is always on the right level for easiest and fastest handling. This all adds up to substantial savings in production costs.

Got a Lifting Problem?

GLOBE

has the answer



Muscle is the world's most wasteful lifting power. A Globe OiLIFT will do it cheaper and better.

For helpful information on Self-Leveling Ramps, Machine Loading Lifts, Industrial Truck Service Lifts, Production Lifts, etc., write for bulletin F-410

GLOBE HOIST COMPANY • 1000 E. Mermaid Lane, Philadelphia 18, Pa.
(Factories at Des Moines, Iowa & Philadelphia, Pa.)

Circle No. 116 on Reader Service Card for more information

rollers of steel tubing, over which the plastic coating is extruded. The thickness and composition of the plastic armor can be varied to suit practically any condition, although a semi-rigid vinyl coating approximately 1/32 in. thick is most often used.

Circle No. 229 on Reader Service Card for more information

Heat Treating Basket—*Hoffman Co.*

Here's a special basket designed especially for handling welding electrodes through a series of heat treating cycles. It is built to stand up under repeated high temperatures and alternate cooling, and at the same time to provide for heat expansion of the rods. These circular-shaped baskets can handle small bundles of rods, and can be easily stacked, separated and restacked.

Circle No. 230 on Reader Service Card for more information

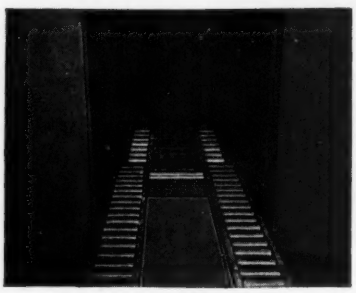
Two-Way Adjustable Conveyor—*Delano Conveyor & Equipment Co.*

Here's a power driven belt conveyor which is adjustable in both length and height. It's also portable and reversible, and is available in double-ended models. Electric eye controls may be incorporated for power trucks or walking traffic. It can carry loads up to 250 lbs. per unit on the extended boom, or a total load of 1000 lbs. The standard model is 10 ft. long when closed, and 18 ft. extended. Other models, such as the double boom are 7 ft. closed and 22 ft. open.

Circle No. 231 on Reader Service Card for more information

NEW! ISLAND PALLET DOLLIES

HANDLE WITH EASE



cut Loading Time in half

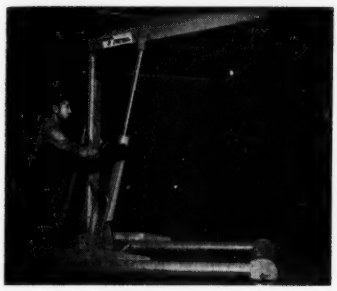
TAKE over where fork trucks leave off . . . at the Truck or freightcar door. Island Pallet Dollies have staggered bottom rollers to eliminate trouble from floor racks. Built to handle *your* pallets. All parts are standard equipment. Write for Bulletin F-4.

ISLAND
EQUIPMENT CORP.
27-01 Bridge Plaza North
Long Island City 1, N. Y.

Circle No. 120 on Reader Service Card for more information

Versatile Floor Crane—*Ruger Equipment, Inc.*

Through a simple, yet effective combination of hydraulic power and cantilever boom, Ruger Floor Cranes are said to be able to reach out, over, under; pick up, lift, lower; and to

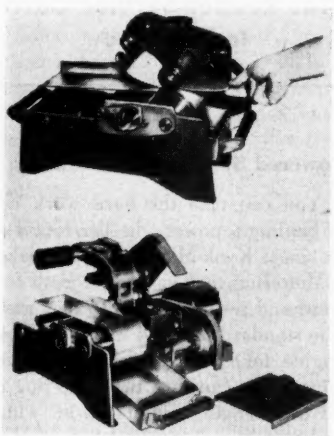


travel with load anywhere you can push a hand truck. Short back-and-forth strokes of the pump lever lift load from floor up to 9 ft. (higher with extension boom attachment). Lowering of the load can be at a fast rate, or slow as desired. Manufactured by the Ruger Equipment, Inc., the cranes are available in ½ ton, 1 ton, 2 ton, and 3 ton sizes.

Circle No. 232 on Reader Service Card

Latex Cementer—*Potdevin Machine Co.*

A new single-roller latex cementer automatically adjusts itself to varying



thicknesses of materials up to three in. The machine is made by Potdevin Machine Co. Its design features a 2-in. dia. driven feed roller and 4-in. glue rolls, a special ductor roller control for even application of adhesive, and bearings to minimize maintenance. It is supplied complete with ¼ H.P. motor. Cast iron construction assures long life. All parts which come in contact with the adhesive are made of stainless steel. The cementing machine is manufactured in widths from 1 in. up to 12 in. Table space used is from 20½ in. x 22½ in. to 20½ in. by 30 in.

Circle No. 233 on Reader Service Card

Giant Tote Box —*Durable Formed Products, Inc.*

Giant tote boxes, 15 in. deep have been announced by Durable Formed Products, Inc. Made of one sheet of non-chipping Royalite that is said to resist most alkalies and solvents, the boxes weigh only seven lb., but will withstand a load of up to 175 lb. Smooth finish inside and out and curved corners facilitate emptying and cleaning. Design permits nesting or stacking for storage. Outside dimensions 27 in. long, 23 in. wide, and 15 in. high.

Circle No. 234 on Reader Service Card

FREE!
Revolvator's new Truck
Index helps you pick size, capacity and type to suit your needs.
Send coupon today.
REVOLVATOR CO.

REVOLVATOR CO.
8839 Tonnele Ave., North Bergen, N. J.

Gentlemen:
We want to know, without obligation, all about Revolvator Go-Getter Pallet Type Liftrucks.

Name.....

Position.....

Company.....

Address.....

Circle No. 121 on Reader Service Card

FAST LIFTING SPEEDS OUTPUT!

The fast lifting action of the "Series 700" 'Load Lifter' Electric Hoist shortens handling time. Manpower can process more units per day for less.

Keep your production at high levels around the clock. Put this heavy-duty 'Load Lifter' on the job. Push-button control with only 24 volts at the push button, wipes out muscle strain, increases safety, and maintains worker efficiency. Simple design and rugged construction assure long life in the severest service. Capacities: 1,000 pounds upwards. Single and two-speed control available. Bulletin No. 399 contains all the facts. Write for a copy.

MAXWELL MANNING MOORE TRADE MARK

'Load Lifter'® HOISTS

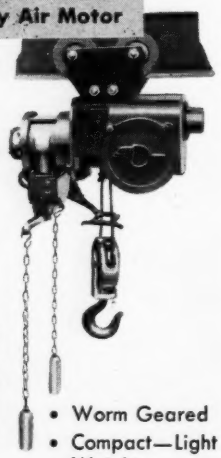
MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' Industrial Instruments.

Circle No. 122 on Reader Service Card

Circle No. 123 on Reader Service Card

PNEUMATIC HOIST with Rotary Air Motor



Capacities 250 lbs. to 1 ton Fast Lifting Speeds

Pulseless, rotary, air motor; no reciprocating parts.

- Worm Geared
- Compact—Light Weight
- Exceptionally Smooth Running
- Close, Sensitive Control

PT Hoist shown with monorail trolley; can also be furnished with upper suspension hook. *Write for P.T. Bulletin 708.*

DETROIT HOIST & MACHINE CO.
8213 Morrow St., Detroit 11, Mich.
Designers and Manufacturers Since 1905

High Speed Weldment Positioner —*Panjiris Weldment Co.*

This positioner is said to automatically engage, raise, and rotate a 70-ton hopper car to permit finish welding with submerged arc welding process. Cars are tacked together before being rolled to the positioner on their own

truck. After the car is properly located, it is clamped automatically by air cylinders, which operate the outriggers on the positioner. Raising and rotating are accomplished by means of pushbuttons which synchronize the movements. Approximately 300 ft. of welding can be done in 17 minutes.

Circle No. 235 on Reader Service Card

Standardized Conveyor Units— *Standard Conveyor Co.*

From standard Handidrive Units made by Standard Conveyor Co. you can build a complete conveyor system, to suit your requirements. Belt, live roller and roller gravity conveyors are offered in five standard widths: 10½ in., 14½ in., 16 1/2 in., 20½ in., and 26½ in. between channel siderails.

Circle No. 236 on Reader Service Card

Pail Printer—*Industrial Marking Eqt. Co.*

A Pail Printer used for printing around the circumference of two, three or five gallon pails has been developed by Industrial Marking Equipment Company. The pail you want to mark is put on an expanding mandrel; when one revolution is tripped, a rubber die prints your identification or message on the container. Ink is applied to the die by an ink reservoir and a series of distributing rollers. Pails can be printed as fast as your operator can load and unload the mandrel.

Circle No. 237 on Reader Service Card

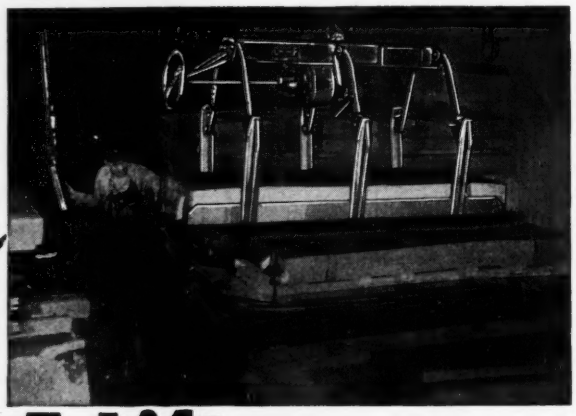
For More Information On These New Products, Use The Reader Service Card In This Issue

Powered Barrow—*Kwik Mix Co.*

You can take the hard work out of hauling a power wheelbarrow. For instance, Kwik-Mix Company makes a Moto-Bug that has power both forward and reverse from 1½ to 4 mph. The standard model 4 hp, 4-cycle gas engine takes full loads up 20% inclines. You can turn the Moto-Bug in its own length, and its 33-in. width makes it easy to work with in narrow aisles. Some of the interchangeable attachments you can put on the Moto-Bug: a 10 cu. ft. hopper body; a flatbed platform that carries a 1200 lb. load; an adjustable fork lift; a scraper blade.

Circle No. 238 on Reader Service Card

One man **and a C-F Lifter...**



One man and a C-F Lifter handle the sheet steel stock in and out of storage in this plant with ease, speed and economy. C-F Lifters can pick up, carry and unload more loads per hour using less man and crane time than any other method. Note how closely a C-F Lifter piles sheets—this results in great savings in storage space. Jaw adjustments for carrying different widths of sheets are made in a few seconds by the operator—an important feature when varying sizes of stock are used.
C-F Lifters are made in sizes to handle from 2 to 60 tons in standard and semi-special designs.

Write for the bulletin "C-F Lifters." It illustrates the many cost saving advantages of these lifters.

CULLEN-FRIESTEDT CO.
1320 S. Kilbourn Ave., Chicago 23, Ill.

HANDLE SHEETS with C-F LIFTERS

Circle No. 124 on Reader Service Card for more information

Versatile "Walkie" Saves Manpower, Speeds Production

Under the stress of today's pressure for increased production, more and more firms have come to realize that one of the best ways to conserve manpower and speed production is to break the bottlenecks of the flow of "in-process" material and expedite the outflow of finished products.

It's a known fact that in many highly competitive businesses, with standardized machines turning out standardized products, the only "edge" the individual plant can achieve over its competitors is its greater efficiency or success in the solving of its material handling problems.

Of course, there are various types of material handling equipment and each one is designed to solve the problems of a particular plant or industry. Of these, some of the most diversified and versatile are the various adaptions of the battery powered "walkie" truck. One of its best known applications is in plants which have the problem of narrow aisles and sharp turns.

The "walkie" is now made in pallet, platform, hi-lift and telescope high-lift pallet types, where low underpasses preclude the regulation models. Masts on this type can extend to 96" and will carry and hoist loads of over a ton.

Some interesting facts and figures can be cited on the practical application of the "walkie" to the work involved. On certain incoming items, one company reported reducing the manhours for unloading a boxcar from 16 to four. One man with a "walkie" pallet truck in four hours now does the work it took two men eight hours with former methods.

Warehousing space, once cramped and static, has been increased 30 percent by the efficiency of the hi-stacker "walkie". The Navy found that during the war the "walkie" reduced its former dock transportation time as much as 68 percent.

In addition to its flexibility and maneuverability, the "walkie" has become popular because it is simple to operate and requires a minimum of maintenance.

According to some, the first original "walkie" was developed and perfected in Cleveland. While watching the back-breaking labor and multitudinous trips of a labor gang unloading a carload of flour at the Ward Baking Co. in 1936, I. F. Schreck of the Moto-Truc Co. conceived the idea for a battery operated "walkie" type truck. The success of this type of equipment ever since speaks for itself.

Circle No. 125 on Reader Service Card for more information

ROLLAWAY SEMI-LIVE SKIDS AND JACKS

FEATURING THE RE-NU TOP

Steelbound Rollaway Skids combine the best features of bolted and welded designs. The frame supporting members are arc-welded, and the *renewable* hardwood deck is tightly clamped with steel bolts of extra tensile strength. Welded-in, heat-treated, steel connecting pin. Semi-steel rubber-tired or Flor-Savr wheels with Hyatt roller-bearings, heat-treated steel axles.

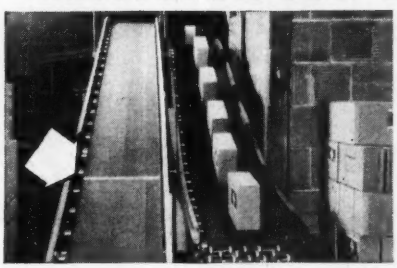
CAPACITIES: 1500, 2500, and 5000 POUNDS
YALE AND TOWNE ROLLAWAY JACKS are stocked at the Lanham Company's plant and are sold and shipped directly from Louisville for use with ROLLAWAY SKIDS.

SECTIONAL BINS RE-NU TOP SKID PLATFORMS SKID BOXES

THE LANHAM COMPANY

ALLIGATOR®

CONVEYOR BELT LACING



Every Tooth A Vise*

in Long Continuous Lengths for Conveyor Belts . . . .

- ★ Excellent for Package Conveyors, Portable Loaders, Trenching and Ditching Machines, etc.
- ★ In canneries where corrosion or rust is a problem specify Alligator made of Monel.
- ★ For magnetic separators or anti-sparking specify Alligator made of Everdur.
- ★ Separable and smooth on both sides.
- ★ 12 sizes. For belts from 1/16" to 5/8" thick—and *any width.*

Order from Your Supply House. Ask for Bulletin A-60.

FLEXIBLE STEEL LACING CO. 4702 Lexington St., Chicago 44, Ill.

JUST A HAMMER TO APPLY IT

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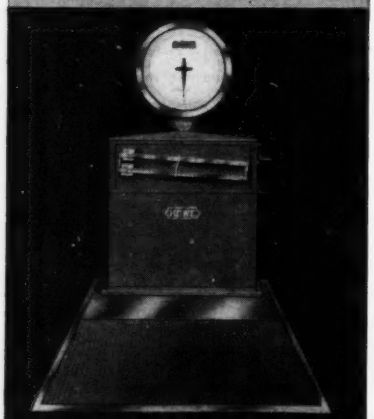
HOWE
Scales



Floor Scale with Cabinet Dial

Modernize your beam scales with Howe 77 Weightographs

HOWE
Two and Four Wheel
Hand Trucks

The HOWE SCALE Co.
RUTLAND, VERMONT

Dept. F4 Rutland, Vermont
Please send me:
HOWE CONDENSED SCALE CATALOG NO. 11 ☐
HOWE 77 WEIGHTOGRAPH FOLDER ☐
HOWE HAND TRUCK CATALOG NO. 15-B ☐

Name _____
Title _____
Company _____
Address _____
City _____ State _____

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In the Yard or in the Plant...

EUCLID'S "pace" the Assembly Line

Euclid Cranes prove an important link in the chain of operations required to convert incoming materials into outgoing products in a vast number of manufacturing plants

Facility of movement through ease of precision control enables "Euclids" to handle a large variety of production operations, and to readily "pace" the assembly line. Write us concerning your crane problems We'll be pleased to submit a proposal

EUCLID CRANES AND HOISTS Raise Profits

THE EUCLID CRANE & HOIST CO.
1362 CHARDON ROAD
EUCLID, OHIO

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LITERATURE AVAILABLE FROM ADVERTISERS . . .

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rebolt. More information is available from United States Rubber Company.

Circle No. 54 on Reader Service Card

Government-specified methods of foil and laminated-foil packaging are described in "Coach Itinerary" from Reynolds Metals Company.

Circle No. 73 on Reader Service Card

Baldwin-Lima-Hamilton Corporation would like to show you how their precision air-controlled clutches and brakes give you smooth, easy, responsive control of the hoist and drag lines on their shovels, cranes, draglines, pullshovels and truck cranes.

Circle No. 8 on Reader Service Card

An important booklet from General Box Company will show you how to cut packing and shipping costs with their shipping containers for practically all types of products.

Circle No. 68 on Reader Service Card

Torque-Arm bulletin from Dodge Manufacturing Corporation describes their latest speed reducer which has a 43 h.p. capacity.

Circle No. 28 on Reader Service Card

Let The Goodyear Tire & Rubber Company show you the five reasons why their Xtra Cushion industrial tires will bring lower maintenance costs.

Circle No. 7 on Reader Service Card

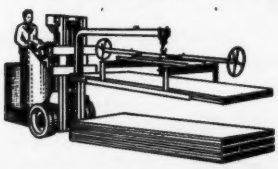
Get the helpful, illustrated catalog on the complete Barrett line of material handling equipment from Barrett-Cravens Company. Included are various types of electric lift trucks.

Circle No. 19 on Reader Service Card

If you ship or store metal parts or products, Angier VPI Wrap can be used as a box liner or an envelope as

MANSAVER® GRABS for ALL INDUSTRIES

WHATEVER IS MADE



YOU CAN USE MANSAVER GRABS

The Mansaver Grab above, for steel, is one of hundreds for specific application.

Mansaver Grabs are made to handle:

Slab	Coil	Strip	Bar	Tube
Drum	Case	Crate	Bale	Pallet
Roll	Rail	Pipe	Box	Barrel

There is also a Mansaver Grab for every repeated lifting operation at your plant.

Our 25 years of specialized experience in designing Grabs for difficult handling problems is always available.

Write for Bulletin 408. No obligation.

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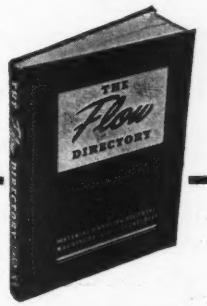
It's So Easy... to get the right answers to your material handling problems when you use



NEW 1952-53 FLOW DIRECTORY

Wherever materials are handled the FLOW DIRECTORY is in the spotlight as the authoritative source of information on material handling equipment. In addition to hundreds of engineering charts and tables which it contains, it classifies and describes every kind of material handling equipment. It helps you to select the equipment you need, and tells you where to buy it. Known and used throughout the world.

Find the information you need in one of these six completely indexed sections:

- Equipment and Manufacturers
- Trade Name Index
- Manufacturers' Outlets
- Engineering and Technical Data
- Manufacturers' Catalogs
- Who Sell Equipment

PRICE $6.50

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CLEVELAND 13 OHIO

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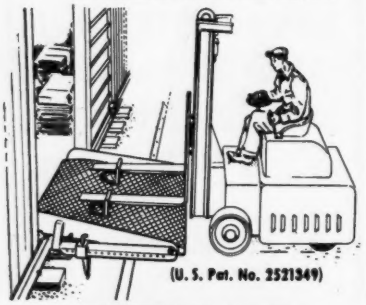
Circle No. 133 on Reader Service Card

Elizabeth Iron Works

One Man "BRIDGE RAMP"



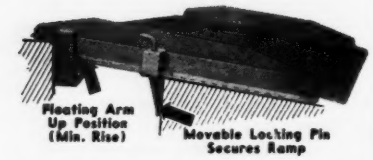
(U. S. Pat. No. 2521349)

A NECESSARY Auxiliary to a Fork Lift Truck
15,000 lb. CAPACITY

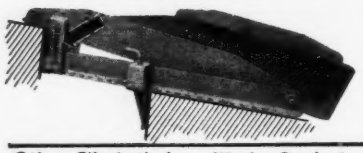
★ *Rugged all-steel welded construction*
★ *Lift handles recess flush with riding surface*
★ *Curvature—for greater height differential*
★ *Shock plates at corners absorb impact*
★ *Stringers for safety and added rigidity*

FLARE or RECTANGULAR
Sizes and types to span gaps from 5" to 58"
Rise 0" to 7" (+ or −).

NEW, IMPROVED Self-Levelling Locking Device and Floating Arm



Sleeve Permits Floating Arm to Rest Flat on Lowest Level (Max. Rise) for 90° Angle Bearing Against Platform



Other Elizabeth Iron Works Products for Efficient Materials Handling . . . .

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2,000 lb. capacity

MASTER MEDIUM HAND TRUCK RAMP
4,000 lb. capacity

REFRIGERATOR CAR RAMP
15,000 lb. capacity

MULTI-STAK PALLET STACKER UNIT
4,000 lb. capacity

ELIZABETH IRON WORKS, Inc.
Materials Handling Specialists
Steel Fabricators SINCE 1907
512 GREEN LANE, ELIZABETH, N. J.

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well as a container insert. Get "VPI Facts" from Angier Corporation.

Circle No. 79 on Reader Service Card

You can eliminate the excessive cost of jolting lift trucks by equipping them with Monarch Mono-Cushion industrial tires. More information is available from The Monarch Rubber Company.

Circle No. 27 on Reader Service Card

Gaylord Container Corp. offers information on a light-weight yet sturdy corrugated fibre drum now available in rectangular and multi-sided types. Lid and bottom are secured by steel strapping over inter-locking fingers. Delivered to the user knocked down.

Circle No. 70 on Reader Service Card

Gaylord Container Corporation would like to prove that their boxes are tough enough to take the roughest kind of handling, and will stand between your product and possible damage in shipping.

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Plantman

MOTORLESS INDUSTRIAL FLOOR SWEEPER

Write for FREE booklet No. 75 on MECHANICAL FLOOR SWEEPING.

HANDLING DEVICES CO. INC.
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Cushman

"VELVS"
(VERY LIGHT VEHICLE)

Light hauling jobs for any INDUSTRIAL OPERATION made easier the CUSHMAN WAY

Total operating cost — less than ¾c per mile!

More and more companies are finding new uses every day for the Cushman "VELVS" — the light delivery vehicle for plant hauling, for mail, for outside deliveries, for literally hundreds of jobs. The Cushman "VELVS" are so economical, too — low in operating cost (less than a penny per mile). Save time, save money, and gain convenience with Cushman "VELVS".

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CUSHMAN MOTOR WORKS, INC.
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BRAND
PALLETS

are being purchased by many of the leading firms in the nation . . . companies that demand QUALITY, and who know that low-priced "cheap" pallets are most expensive in the end because of high maintenance cost! ROUNDED CORNERS are available on any of our pallets at slight extra cost.

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PINE BLUFF, ARKANSAS

TRADE MARK

Complete specifications from Mobilift Corporation are available on their latest Lev-R-Matic Drive fork lift truck, the 3500-lb. capacity Model "H-W" stand-up type.

Circle No. 40 on Reader Service Card

Real proof—in dollars and cents—that Reading electric hoists can help you cut handling costs and step up production is available from Reading Crane & Hoist Corp.

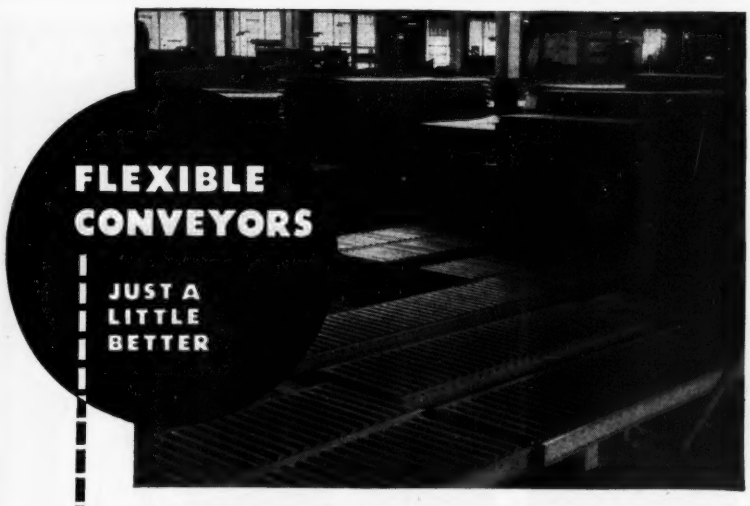
Circle No. 137 on Reader Service Card

Hand sweeping is an expensive luxury, says Wilshire Power Sweeper, and there's a Wilshire power sweeper to fit your needs. Complete information, or a demonstration, is offered.

Circle No. 34 on Reader Service Card

"Case Histories" is a booklet from Lamson Corporation which will prove to you that you can eliminate wasted effort, speed production and cut costs.

Circle No. 21 on Reader Service Card



FLEXIBLE **Gravity Roller Conveyors are an achievement in functional design. They embody "extras" which deserve your consideration:**

- **just a little more capacity**
- **just a little more durability**
- **just a little more versatility**

AND YET, THEY COST NO MORE!

FLEXIBLE CONVEYOR COMPANY

Manufacturers of a Complete Line of Conveying Equipment.
1624 McDonough Street Sandusky, Ohio

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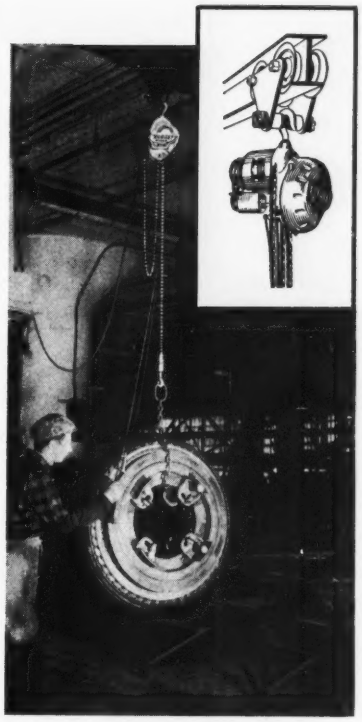


LICKS THE WORK — NOT THE WORKER

Manual lifting quickly gives workers that licked feeling. But, with a tireless 'Budgit' Electric Hoist to save muscles, young men, women, older men keep defense and civilian production rolling.

The 'Budgit' Hoist converts electricity into powerful hoisting action. Every capacity — from 250 to 4,000 pounds. Uses only a few cents worth of electricity to lift loads all day. Operators retain their efficiency, avoid the hazards of lifting.

Every 'Budgit' Hoist is a complete lifting unit in itself! No extras to buy. Just hang it up, plug into the nearest electric socket, and use! A.C. and D.C. models. Prices start at $119. For more detailed information, write for Bulletin No. 391.

'BUDGIT' CONDUCTOR CORD TROLLEYS — keep flexible conductor cord up out of way while carrying electricity to monorail hoists. Roll smoothly around curves, past switches.

MAXWELL MANNING & MOORE INC. TRADE MARK

'Budgit'® HOISTS

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of "Shaw-Box" Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, and 'American' Industrial Instruments.

Circle No. 136 on Reader Service Card

Circle No. 139 on Reader Service Card

A 28-page bulletin from Edison Storage Battery Division of Thomas A. Edison, Inc., describes the unit-load method of handling, the power requirements of material-handling trucks, and the characteristics of Edison Nickel-Iron-Alkaline Storage Batteries.

Circle No. 46 on Reader Service Card

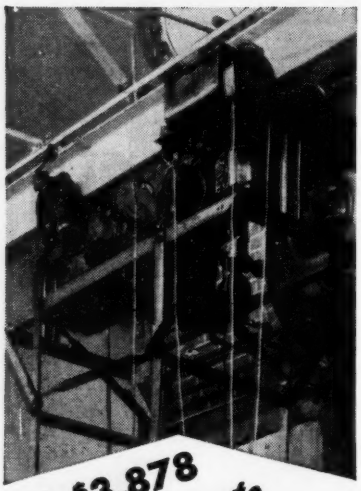
If you handle small parts, a brochure from The Chas. Wm. Doepke Manufacturing Co., Inc., fully explains the Nestier System, how it cuts costs and speeds up production.

Circle No. 41 on Reader Service Card

One man and a C-F Lifter handle sheet steel stock in and out of storage with ease, speed and economy. "C-F Lifters", a bulletin from Cullen-Friestedt Company illustrates the cost saving advantages of these lifters.

Circle No. 124 on Reader Service Card

You can avoid the danger of improper packaging and great loss of money by



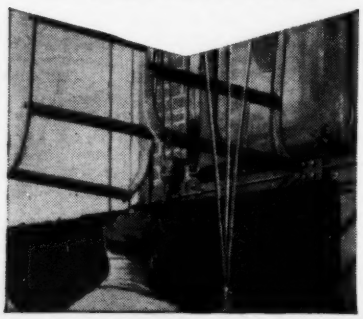
A $3,878 answer to YOUR HANDLING PROBLEMS

- Here's *real* proof—in dollars and cents—that Reading Electric Hoists can help you cut handling costs and step up production, *right now!* This Reading-engineered Electric Hoist, used for coal and ash handling, did more than "pay its way" through peak performance.
- $3,878 saved—*every* year for more than 12 years!
- Maintenance costs averaged less than 1% for over 12 years!
- Fuel costs cut by more constant boiler firing.
- Less dust and dirt — reduced boiler room cleaning time.

Decide now to put *all* the cost-reducing advantages of Reading-engineered Electric Hoists to work in your plant. Contact us—let a Reading engineer work with you—give you real help in getting the right hoist for your job.

CHAIN HOISTS • ELECTRIC HOISTS
ELECTRIC TRAVELING CRANES

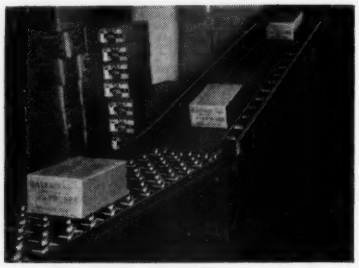
READING CRANE & HOIST CORPORATION
2108 ADAMS ST., READING, PA.



READING HOISTS

Circle No. 137 on Reader Service Card

"STREAMLINER" CONVEYOR SYSTEMS



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The only post-war hand lift truck . . . New design, proven by thousands of satisfied users, and constantly increasing demand.
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Market Forge Company
EVERETT 49, MASSACHUSETTS
55 years in the Materials Handling business.

Circle No. 138 on Reader Service Card for more information

rejects with Amsco packaging equipment. A book from Amsco Packaging Machinery, Inc., tells about "barrier type" packaging for U. S. Government orders.

Circle No. 85 on Reader Service Card

Lansing platform trucks are made in models and sizes to fit every job, says Lansing Co. Their catalog describes these trucks in detail.

Circle No. 59 on Reader Service Card

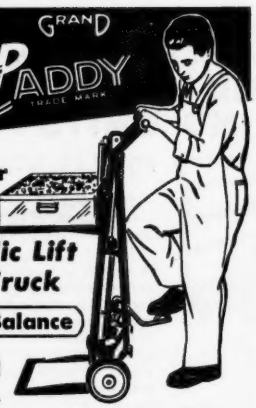
Bulletin 48-JS from Nutting Truck and Caster Company gives all the facts on the Nutting Jack-Skid handling system. The Nutting jack operates entirely by gravity and leverage.

Circle No. 69 on Reader Service Card

Oildraulic elevators are designed for low-cost installation and economical, trouble-free operation. A catalog from Rotary Lift Co. describes these elevators.

Circle No. 66 on Reader Service Card

GRAND
Shop CADDY
TRADE MARK



The Faster Action
Hydraulic Lift Hand Truck
Perfect Balance

The Grand Shop Caddy, industry's most useful hand truck, performs lifting and moving jobs often requiring 3 men. It is safe and easy to operate in confined areas—takes no more room than an ordinary hand truck. Either hand or foot lever hydraulic operation.

There is a Shop Caddy Model for your particular needs.

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Ask Your Grand Dealer for a Demonstration in Your Own Plant

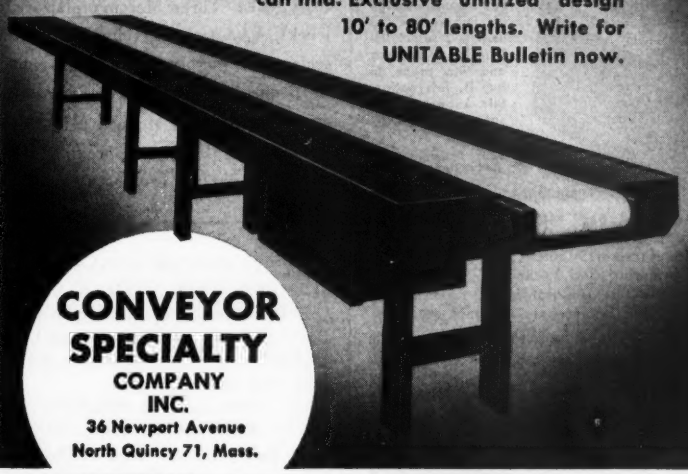
Also see other Grand Materials Handling equipment including Motor-Driven Lift Hand Trucks, Elevators, Portable Cranes, Automatic Pan and Barrel Dumpers.

MANUFACTURING and SALES CO.
Materials Handling Division of Grand Specialties Co.
3101 W. GRAND AVE. • CHICAGO 22, ILL.

Circle No. 140 on Reader Service Card

Circle No. 141 on Reader Service Card for more information

UNITABLE®
BELT CONVEYOR
For Assembly - Inspection - Packaging
The most ADAPTABLE portable conveyor you can find. Exclusive "unitized" design 10' to 80' lengths. Write for UNITABLE Bulletin now.



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POWER TO FIT THE MACHINE
POWER TO FIT THE JOB

WISCONSIN-Powered
Elwell-Parker Fork Truck

Lifting as much as a 2,000 pound load and then "walking away with it," is easily handled by this compact fork truck, built by Elwell-Parker Electric Company, Cleveland, Ohio. It's powered by a Wisconsin Heavy-Duty Air-Cooled Engine.
Buyers and builders of fine equipment look for many factors in selecting power. And, those factors you *look* for, *find* and *endorse* are built into Wisconsin Engines. For instance, there's fool-proof air-cooling, summer and winter. You'll also find that a Wisconsin Engine crankshaft rides at both ends on tapered roller bearings, reducing the chance of bearing failure. An OUTSIDE, easily-serviced rotary-type high tension magneto with impulse coupling for faster starts, *plus* positive lubrication, also add to power dependability.
Write for "Power Magic" telling about all 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 30 hp.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

A 7032-1⅛

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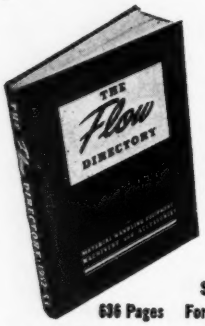
NOW! BIGGER... BETTER THAN EVER
The 1952-53 Edition of
The FLOW DIRECTORY



Wherever materials are handled, material handling equipment is needed . . . . . Here's a comprehensive and accurate source of information to help you select the type for your needs and the place to buy it. Internationally known. Internationally used.

Six Convenient Sections
636 Pages For Quick, Easy Reference

1. Equipment and Manufacturers
2. Trade Name Index
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OPPORTUNITIES

USED EQUIPMENT MEN JOBS LINES

Rates: for "Positions Wanted" $8.00 minimum, limit 25 words. For all other classifications $10.00 minimum for 25 words; each additional word 25c. Boldface type or all capitals, $12.00 minimum for 25 words, each additional word 35c. Box address counts as five words. All insertions payable in advance.

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FOR SALE Three Mercury platform lift trucks. AAA-1 shape. Complete with batteries and battery charger. About one-third new price. Subject to prior sale.

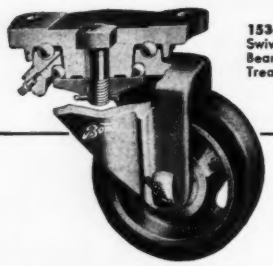
One Jeffrey-Taylor Model 4-M1 Vibrating Type Barrel Packer. Approx. half-price. Box 539 Kokomo, Indiana.

12" ROLLER CONVEYOR
$1.50 PER FOOT, USED, EXCELLENT CONDITION, 2 ⅛" DIAMETER BALL BEARING ROLLERS, 4" BETWEEN CENTERS, 1" BELOW RAILS, WEIGHT 150# PER 12' SECTION.
THE ELYRIA BELTING AND MACHINERY CO.
P. O. Box 5 Elyria, Ohio

Battery Charger, G.E. Copper Oxide, Series 6 RC 148F12 and one 15-cell Ironclad Exide Battery TLM 19-plate storage, capacity 450 ampere hours. Used with Elwell-Parker handling newsprint. Battery in good condition when replaced January 1952 with gasoline engine: Both $500.00 F. O. B. our plant. Write C. J. Berry, Evening Star, Washington, D. C.

LINES WANTED

Wanted: material handling equipment lines including hand trucks, casters, wheels, conveyors, hoists, etc. for the Pacific Northwest. Reply Box number 4151 FLOW.



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Bond® built-for-the-job CASTERS
insure
- Increased plant efficiency
- Faster materials handling
- Lower production costs

SELECT any of the more than 25 different types of Bond industrial casters for your materials handling jobs and *know* that these efficient, sturdy and economical casters will roll-up greater production profits every time.

For the complete facts on all Bond Truck Casters write for your copy of Catalog K-38.

BOND FOUNDRY & MACHINE CO.
Manheim, Penna.

1A Series—Stationary Caster equipped with Plain Bearing Semi-Steel Wheel.

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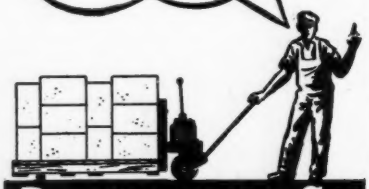

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HIGHLIGHTS OF THE MONTH'S NEWS ....

(Continued from page 52)

where credit is due and thank Ed Lee, Saginaw Products Corp., for his help in connection with the survey on conveyors that appeared in our January and February issues.

We'd like to congratulate Purdue University and the Chicago, Cincinnati, Indianapolis and Louisville chapters of the AMHS for an outstanding material handling conference held at the University on February 25 and 26. The quality of the information disseminated during the two days made it well worth the time of close to 100 persons who attended (a record turnout for this, the third such Purdue conference). We understand that Georgia Tech is contemplating a similar meeting in the near future for the people in that area of the country. The quality of these conferences should be of interest to other schools — certainly industry is benefiting from them.

Did you know that on February 28 and 29 a forum was conducted aimed at delineating and proposing technical solutions to the major problems-of-the-day in the field of dry bulk material handling? Staged by the Material Handling Institute, the meetings were attended by eight representatives of major industries who handle large quantities of dry material in bulk, eight men from equipment manufacturers with products and methods specifically designed for this type of handling, plus editors of top interested publications. You can expect to find details of the problems and their solutions, as covered in this forum, in future issues of FLOW.

That's about all the news for this time. See you next month.

The Editors

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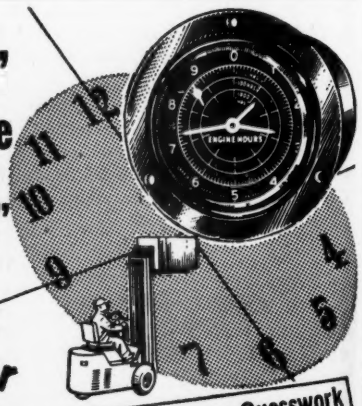

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